ELECTRIC RAILWAY JOURNAL

Consolidation of Street Railway Journal and Electric Railway Review

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Engineering Science Gets Substantial Impetus in England

ANNOUNCEMENT has been made that the famous pioneer builder of high-speed vessels, such as torpedo-boat destroyers, Sir Alfred Yarrow, has given £100,000 to the Royal Society (of Great Britain) for the promotion of engineering research. In doing this he follows the excellent example of Ambrose Swasey, Warner & Swasey, Cleveland, Ohio, who some years ago gave practically the same sum, or $500,000, for a similar purpose in this country. The Engineering Foundation is the result of the Swasey gift. It is performing, in a quiet way, a useful service, by encouraging that fundamental investigation upon which industrial progress ultimately depends.

The electric railway industry in Great Britain, America and elsewhere will benefit by such noble gifts as those of Swasey and Yarrow. The Charles A. Coffin Foundation recently established by the General Electric Company will have much the same effect in providing a stimulus to engineering development. Electric railway transportation is an application of engineering of nearly all varieties. Whatever makes engineering sounder at its foundations in the end permits the electric railways to give better service.

High Fixed Investment in Railways Merits Greater Publicity

IN HIS recent address before the Wisconsin Utilities Association, James P. Barnes referred to the lack of understanding that many business men have of the electric railway industry because of its highly specialized vocabulary. He said that while we speak fluently of return on the investment or return on fair value of the property, we refer infrequently to the fact that in this business the usual rate of annual gross earnings is only from 15 to 30 per cent of the amount invested in the property. To put it in terms that the merchant or manufacturer can understand, we should refer to the annual turnover of capital. Many lines of business turn over the capital from two to ten times a year. Naturally it is amazing to find an industry where the capital is turned over but once in from three to six years, as is the case of the electric railways.

This small volume of business on the invested capital is one of the most serious problems of the industry. A merchant invests in stock which he cannot dispose of, but in a few months he is able to close it out, even though at a loss, and stock up with new goods. Before the year is over the loss will be absorbed and forgotten. On an electric railway, however, a mistake, say in the design of cars or track, cannot be forgotten so readily. It must be used intensively for a number of years in order to recover the original cost.

The thought to be emphasized is that realization by the public of the railway problems immediately enlists in most cases fairness and co-operation. That makes it worth while to spend considerable effort on getting the right kind of publicity and having it handled right in presenting it to the public. Mutual understanding might often silence critics who insistently demand lower fares and more service without having any idea of what it is going to cost.

Simplified Practice Next Best to Standardization

WHILE many companies are prevented from adopting various American Electric Railway Engineering Association standards because they cannot afford to throw away equipment and track which is still good for many years of service, there remains much which they can do in the direction of simplified practice, as urged by Secretary Hoover. This is particularly true in the case of lines with a number of operating divisions and also with holding companies.

An inventory of the equipment of the different lines of a holding company, for instance, may show that each of its operating properties has a half dozen or more types of motors of modern design as well as a number of the ancient types. It is quite probable also that an engineering examination of the operating conditions of a property will show that the company can get along very well with two or at most three types of modern motors. The variety of equipment has been brought about either because the motors were purchased in small lots when the railways were being operated separately or because they were bought in large quantities by the head office and distributed in small numbers to the different companies.

In a case like this at least one large holding company is endeavoring to standardize each property on the basis of the minimum number of motors possible on its lines, say two or three. In some cases this may mean the shipment of some motors from one road to another, but it means also the relegation of the less efficient motors to the plows, sweepers and other equipment not often used and to the scrap heap, and confining purchases on each property to two or three modern types. Obviously, much the same practice can be followed with other parts of the equipment, even cars, if the railways are not too far apart so that transportation charges would be too high.

The application of this system of simplified practice has been mentioned in the case of a holding company, but the plan is equally applicable, of course, to a large company with a number of operating divisions, where there is an advantage in having the equipment repair parts in each car inspection shop kept low. Nevertheless, it is undoubtedly true that the smaller company benefits

more proportionately from standardization and simplified practice than the larger company. The latter can afford to keep a large variety of parts in its storehouse, where the smaller company would be overwhelmed by their variety. It is the latter, therefore, that will be most benefited by standardization or this form of simplified practice.

Do the People Want Interurban Rail Service?

FOLLOWING is a letter received by the editor this week from a resident of a rural community. This letter is an editorial as it stands:

"In an issue of ——— *Star* of Jan. 22, we notice an article quoted from your JOURNAL saying, 'Electric Railway Outlook Improving,' which prompted us to ask you a few questions on this subject.

"We are located between ——— and ———, a distance of 27 miles, and, until the war, had a steam line connecting those two cities, a line that was doing a paying business. But on account of the high price of rails, it was junked and rebuilt in France, leaving this territory without a railroad of any kind, a very fertile country of several square miles.

"The main object of this letter is to ask you if you know of some electrical promoter who would connect us up with the ——— — ——— electric lines on the south and the ——— line at ——— on the north. The old roadbed is still intact, and the people are ready to help by either private subscription or vote a subsidy if necessary.

"Can you give us any information as to where we could get in touch with some real-for-sure promoter who could put this project over, or of some financiers who might take it up? We can show that the old road did a good business, as it was the only outlet of this vast territory. As people have found by experience that the trucking business is not a success, they are very anxious for a railroad of some kind. Let us hear from you."

A Great Industry Without Education

IT SEEMS almost incredible, but it is nevertheless true, that the great public utility industry, ranking among the most important fields of endeavor in both investment involved and value to the common good, is practically without representation in the curricula of the colleges. Young men are trained to be engineers, they are taught general economics, they learn something of corporation law, they may get a smattering of regulatory practices, but there is no course of education that might truly be said to be designed to fit young men to enter the public utility field. Here is a great industry, the ramifications of whose business involve in a particular way almost all branches of engineering, the law and business administration. It draws very heavily upon the graduate rolls of the universities for personnel, yet its needs are not directly in view in the planning of courses of education. Only recently has this situation begun to be realized by the universities and by the public utility interests in a constructive way, and both are now giving the matter some attention.

One of the great tasks in this connection is the work of compiling suitable textbooks. This is a rather formidable undertaking, which should have behind it the combined intelligence of a number of the leading minds of the field. It is one which probably would not be accompanied by a sufficient sale of the books to compensate individual enterprise for its efforts. Which means that the utility companies, looking honestly without thought of propaganda toward the development of future personnel, should sponsor, or give financial aid to this work of providing the universities with adequate textbooks, as written and compiled by accepted authorities in each branch of the utility field. It would seem quite in keeping with the demands of the future that many universities should include in their curricula such courses as would permit the student to specialize his last year or two in public utility administration.

Railway for Express Service; Bus for Local Service

PROVIDENCE, R. I., presents some knotty transportation problems for settlement. If ever a city exemplified the idea which the writer of the cowpath poem had in mind it is the city founded by Roger Williams. It didn't name any of its streets after the author of the poem, but it did name one Weybosset as signifying the idea behind the poem. There would not be synonyms enough to go around, but all streets in Providence might be named Weybosset, or the equivalent, so much are they alike. This succession of narrow, winding streets on the cowpath plan would of itself be enough to tax the ingenuity of any transportation management, but in addition to this there are the seven hills on which the city is set with which to contend. Movement of railway traffic through the business district downtown is both slow and hazardous.

It is to help relieve this situation that the United Electric Railways has hit upon the plan of establishing ten distinct loops in the business district, taking all cars off some streets of heavy traffic, and of running trolleys in express service on Broadway from Providence to Olneyville Square, with buses in use for local service over the same thoroughfare. The run is only 1.52 miles, but it is one of the most interesting experiments yet made with buses, for beyond Olneyville Square seven different trolley routes spread out fan fashion. Moreover, the use of the trolleys in express service means that all the people within the area between Barton Street and the center of Providence are being served entirely by motor buses in lieu of trolleys. In other words, the United Electric Railways is voluntarily giving over entirely to vehicles other than its own some of the streets formerly occupied by it, while in the Broadway instance it may turn out that the company, with both trolleys and buses, will eventually monopolize a goodly part of the street. Even to that there can be no reasonable objection when such occupancy has behind it the idea of the greatest good for the greatest number. The lessons to be drawn six months from now from these experiments may prove to be of considerable value to operators elsewhere confronted with similar problems.

President Harding has again shown his grasp of business and employment problems by promptly putting in effect as far as practicable the recommendation of Secretary Hoover and the Conference on Unemployment, headed by O. D. Young, that government construction work should be minimized when times are good and pushed in slack times. This is a matter of interest to electric railways, for if the plan is emulated by the states and cities, the governmental work in dull years will have an appreciable effect in keeping the riding up.

Oakland Pier from Above

At the extreme left is a lumber pier and slip. The next slip is for freight. The next pier contains the main train sheds with the electric station on the left and that for the steam lines in the center and right. Next are the pumping plants and water tanks for terminal supply and fire protection. The slip farthest to the right is for automobiles.

East Bay Electric Service of the Southern Pacific Railroad

Two Million Passengers per Month Use Trains that Must Connect with Boats on Two-Minute Delay Margin—To Meet These Requirements a Precise System of Maintenance Is Followed in Order to Keep Maximum Number of Cars in Service—The Cars Purchased in 1911 Have Given Very Satisfactory Service

IN THE thriving communities on the east side of San Francisco Bay the Southern Pacific System gives a rapid transit service on what is known as its East Bay electrified division. These lines are operated and maintained according to the same standards as main line service and therefore require a highly efficient system of inspection and upkeep. One of the reasons why a high standard of maintenance and reliability is necessary is that the schedules of the ferryboats running across the bay and completing the journey to San Francisco are maintained independently, and all trains must connect with the boats they meet on a delay margin of two minutes. Because of the necessity of simultaneously loading from thirty to thirty-four cars with ferryboat loads of 2,800 to 3,000 commuters during peaks the system of handling traffic at the Oakland and Alameda ferry terminals has received constant study and has been brought to a high degree of perfection.

Features of the East Bay system as a whole were described in the ELECTRIC RAILWAY JOURNAL for Sept. 18, 1915. Recent changes in equipment and some of the features of present methods of operation, maintenance and inspection are noted in the following:

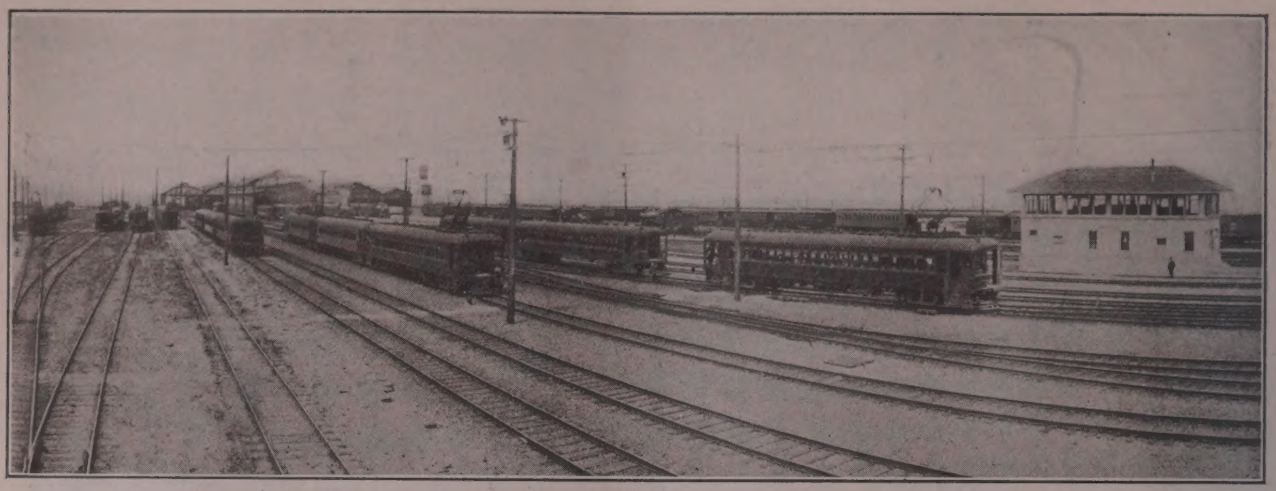
PASSENGER-HANDLING PROBLEM

The electrified division serves parts of Oakland, Alameda, Berkeley and neighboring towns and comprises slightly more than 51 miles of double-track line. Each month it operates approximately 29,000 trains, handling about 2,000,000 passengers. Station stops, approximately 1,500 to 2,000 ft. apart, are made instead of stops at street corners. Trains are scheduled so as to arrive and leave the piers in processional order and are so arranged that no train, when arriving at or leaving terminals, moves through passengers detraining or entering. Most of the traffic is to and from Oakland and Alameda piers, which are the east shore terminals for the ferries that cross San Francisco Bay. With boats operating on a twenty-minute interval, capacity loads are carried on practically all trips during the morning and evening rush hours.

At the San Francisco end of the ferry trip a considerable portion of the business district of that city is within easy walking distance of the ferry, and with the favorable weather that obtains a large part of the year many of the commuters are accustomed to walk the distance between the ferry and their places of business.

On the East Bay side, however, where the property described in this article is located, a different condition obtains. The ferry terminal is several miles from the business district and still further from the residential districts to which most of the commuters go. At this terminal, therefore, all passengers use the electric trains, and during the evening rush hours this means that every twenty minutes the commuters land from two levels of the ferryboat in a period of about two minutes and go directly to the waiting cars.

The fare between San Francisco and all points within



Train Yards at Oakland Mole Terminal

The switch tower at the right controls the movements for all steam and electric trains. In the terminal station, in the background, the electric division uses the structure at the left, covered by a double-truss roof, while the main line steam trains use the higher structure which is located at the right of the electric terminal.

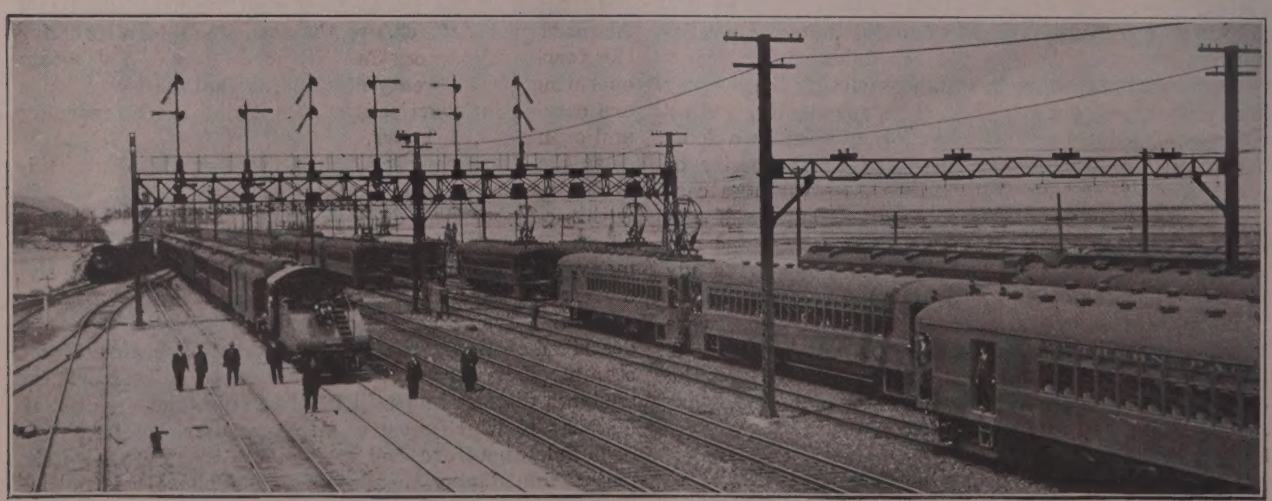
city limits of East Bay cities is the same, namely, 18 cents for a single cash fare, or $4.80 for a commutation book of sixty rides. Collections can therefore be made as the passengers enter the waiting room at San Francisco, thereby avoiding ticket wickets that would cause delay in moving from the boats to the several trains. The boats discharge at both piers on three gangways, two of which are 20 ft. wide and the third 12 ft. wide. The gangway from the upper boat deck leads into a 20 per cent ramp, 12 ft. wide, which affords convenient access to the track level.

ARRANGEMENTS ON THE PIER

On the Oakland Mole the main track level is divided into two parts. Main line steam trains occupy one side (twelve tracks) and the local electric trains the other (seven loading and six storage tracks). On the Alameda Mole there are only electric lines, and the entire terminal with eleven tracks is devoted to their use. All electric trains operating out of these terminals have double-end control so that stub-end tracks are used, and the train is ready for the return trip as soon as the motorman walks the length of the train and takes his place in the cab.

Ordinarily cars are operated out of the Oakland Mole on seven routes, leaving from five tracks, and out of the Alameda Mole on three routes, leaving from three tracks. The Oakland Mole carries five tracks in each direction, which includes steam service as well, and the Alameda Mole two tracks in each direction. Large signs, listing the names and destinations of the various routes, are posted in the waiting room on the San Francisco side, also in the depots on the East Bay side and in several places where the passengers cannot fail to see them as they leave the boat. Route signs are displayed on portable stands near the entrances of all trains, and the conductors and brakemen stand on the main floor near their trains to answer inquiries.

A feature of these terminals is the ample space provided for the separation of streams of traffic going from the boat to the several trains. As passengers come from the ramps or the outlets from the main deck gangways, the lines of traffic diverge fanwise in a spacious area around which the trains are waiting. For the purpose



Typical View of Traffic on Oakland Mole

The mole terminal appears in the distance at the left, and the electric trains on the tracks at the right. In the left foreground a switch engine is bringing main line cars from the yard to be made up into trains on the mole. At the extreme left a switch engine is hauling freight cars between the freight yard and the freight ferry slip.

of speedy loading, the cars, which are designed expressly for this service, have very wide entrances and large platforms so that there is a minimum of delay in getting passengers aboard the train. It is not unusual, even during the rush hours, for the first train to leave within one and one-half to two minutes after the first passenger gets ashore, and the last of the eight trains from the Oakland Mole is ordinarily in motion within four minutes thereafter.

To handle the crowds in this way calls for teamwork, not only between various crews but between different departments. An instance of this occurred recently, when a grounded motor caused a circuit breaker to open in the Oakland Mole terminal just as trains from one of the rush-hour boats were moving out. This cut off the power and, of course, left all the trains in darkness. According to the company rules, power could not be restored until the power house was advised that the trouble was cleared. The foreman of the terminal crew knew from observation that what had occurred was limited to one train and that it had cleared itself. He therefore first ordered the power restored, and then, with assistance, went to the train in trouble. The cars were again illuminated and moving within one minute. Within one and one-half minutes from the time the trouble first appeared the train on which the trouble occurred was also under way, completing its run with the disabled motor cut out.

One disadvantage of having a ferry terminal on a mole is the impracticability of having car storage yards near at hand. The Oakland and Alameda Mole trains have to be made up in a storage yard about 2,000 ft. from the ferry terminal. All cut-outs and pick-ups of cars have to be made during the layover period of eight minutes. This time, however, has been found sufficient, even though practically all pick-ups and cut-outs are made from the center portion of the train, and back-up movements are directed either by hand signals or by the engineer changing operating ends of the equipment.

CARS AND EQUIPMENT

Three types of cars are used, namely, motor cars, trailers and a combination coach and baggage car. The latter is 67 ft. long and seats eighty-eight passengers. The bodies of the motor cars and trailers are alike and they are 72 ft. long and seat 116 passengers. Twenty-one of the trailers have been provided with cabs and operating equipment, so that they can be used as the first car in the train for the purpose of reducing switching and the makeup of trains. The motor cars weigh about 900 lb. per passenger and the trail cars about 600 lb. per passenger.

Each motor car has two 140-hp., 1,200-volt motors per truck, permanently connected in series and geared to a free running speed of approximately 38½ m.p.h. Each motor car has its own current collector; power bus lines are not used in the operation of trains. A 600-volt lighting and control circuit supplied by a dynamotor, however, serves a duplex bus which is run throughout the train to provide current for lighting and control.

Throughout the trains, some of which are made up of as many as eight cars during rush-hour service, there is one nine-point control cable which is coupled to all master controllers and all contactor boxes so that the train can be handled from any cab. This also applies to the air brake equipment, with the exception that air compressor motors are energized direct from the current collectors of individual motor cars.

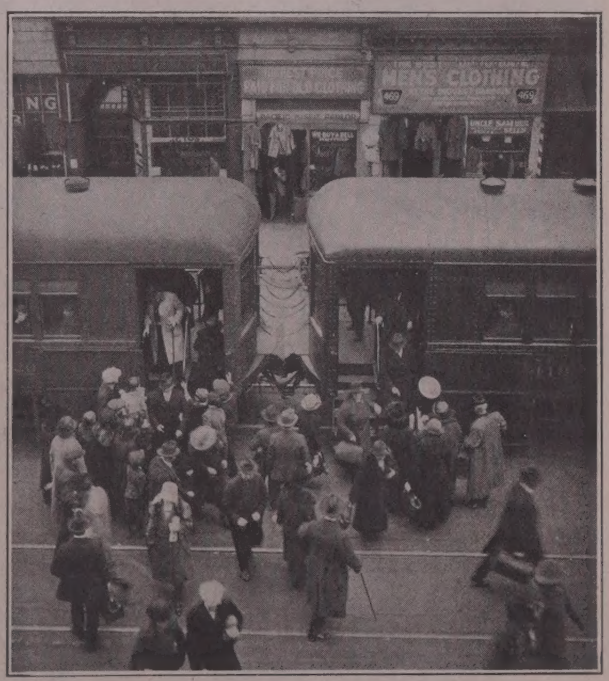
Oakland Ferryboat Entering Slip

These boats carry 2,800 to 3,000 commuters each in rush hours, and the Oakland Mole Terminal is so arranged that even with this large number of passengers the first train leaves within one and one-half to two minutes after the first passenger gets ashore.

All the cars are equipped with the usual A.R.A. standard coupler and safety appliances so they can be jointly switched in yards with main line equipment, and should emergency require the train coaches can be used in main line service with steam power.

INSPECTION AND PAINTING SYSTEM

The electric division has a total of 141 cars in this ferry train service. On the basis of their being repainted at intervals of two years, from six to seven cars are constantly in the paint shop. All of the remaining 134 are needed to handle the daily peak loads. Hence, while there is the advantage of no non-revenue equipment, it is necessary to arrange inspection and



A Stop on the Seventh Street Line with a Seven-Car Train

These cars are 72 ft. long and 10 ft. 5¾ in. over eaves in width. This makes possible a triple seat on one side of the aisle and a double seat on the other and gives a seating capacity of 116 passengers per car. Each motor car is equipped with four 140-hp. motors and with the regular A.R.A. standard coupler so that they can be switched and otherwise connected with main steam line equipment should emergency require at any time.

maintenance programs so that no cars are kept out of service during either the morning or evening peaks except the six or seven held out for repainting, at which time a general overhauling is also given.

Inspections are made at intervals of 1,200 miles on motor cars and 2,000 miles on trailers. To accomplish this effectively, each inspector is trained to do a certain part of the work and is kept at his specialty without such interruptions as making sick relief or filling such other temporary vacancies that occur in the shop organization. A feature of the company's policy in this regard is to require each inspector to sign a statement covering the condition of that part of the work he has inspected. It is considered as important to let him know when he does good work as when he does not, and in order to keep him informed as to the results he has obtained, the performance records of equipment are regularly shown him. By this means the efficiency of each inspector is a matter of record, the force is strengthened and unsatisfactory labor is promptly eliminated.

Between these 1,200 and 2,000-mile inspections the only work done on the cars, in addition to cleaning, is the renewal and adjustment of brake shoes. The shop where the inspection, repairs and painting are done for all rolling stock of the electric division is at West Alameda and is divided into mechanical and electrical departments, each with its own foreman. The electrical foreman has charge of inspection and also the overhauling of electrical equipment; the mechanical foreman directs all overhauling with the exception of electrical equipment. The paint shop is operated as an adjunct under its own foreman and has no direct relation to the other departments.

Cars are brought in for general overhauling at intervals of twenty-four months on the assumption that the mileage will average 4,000 miles per month. On account of the makeup of trains, some cars make only half this mileage and their equipment is overhauled only at forty-eight-month intervals. However, the repainting is done every twenty-four months, regardless of mileage.

General overhauling consists of stripping the car of all electrical apparatus, excepting the frame of the various control units. The car body and trucks are then sandblasted to take off the accumulated dirt, rust and such paint as requires removal. After all necessary cleaning of trucks and car body, the bottom of the car is repainted by the air-pressure spray process. While the electrical equipment is being cleaned and put in good condition the necessary work on the car body and trucks is done, and the car is then reassembled and moved into the paint shop.

During general overhauling and painting cars are out of service approximately thirty days where repairs are heavy, or less time in proportion to the amount of work to be done. The painting consists of a color varnish process covered with an additional coat of wearing varnish which has been found to give good service for a period of two years. This wearing surface is renewed about four times (or it has about ten years total life) before all paint has to be removed for a fresh start. In this district the salt fogs are very severe, the routes follow the bay shore almost entirely, and the cars are stored on piers over the bay water.

For running repairs, the idle units, such as motors, compressors and dynamotors, belonging to cars being painted are used as exchange units for the purpose

Seven-Car Train Operating Out of Alameda Mole

With trains like these the Southern Pacific Railroad carries commuters living in the East Bay cities of Oakland, Alameda and Berkeley to the ferry slip, whence they cross the bay by ferry to San Francisco.

of reducing shop time on such repairs. This makes extra equipment unnecessary. When released from the paint shop, cars are fitted with trimmings and are given approximately a 10-mile test run before being released for service.

The paint shop is equipped with a hot air heating system to maintain a uniform temperature for varnishing. The machine shop is fitted with a twenty-five-ton traveling crane which handles all car bodies, motors and other heavy parts. The inspection shop is fitted with floors between pits depressed approximately 18 in. to facilitate inspection. The trolley wires in the inspection shop have a feeder circuit, opened and closed through a magnet circuit breaker which has a remote control and is coupled with indicating lights and warning whistles so that the trolley cannot be energized unexpectedly. Such remote control switches have a spring release to prevent trolley wires being left energized without an attendant.

CHANGES IN EQUIPMENT

No changes have been found necessary in the original design of the equipment or shops since its initial service in 1911. In 1921 a program of renewing armature windings in traction motors, air compressor motors and dynamotors was begun. This work is handled as the cars come in for overhauling and thus has extended considerably over two years. At the same time all field coils in these units were removed for the first time and for the purpose of renewing the exterior insulation and deteriorated leads.

During the rewinding of the traction armatures it was considered advisable to apply bronze end castings that would support the laminations not only below the coils but between the coils, and also to substitute a stronger air duct spacer in place of the old pressed steel type which has shown a tendency to fail. At the same time a solid conductor was installed in the traction motor armatures in place of the previous split bar overlap type conductor which has shown a tendency to fail before the insulation had run its life. These changes are expected to increase the life of the armature insulation materially.

Some consideration has been given the question of equipping motor cars with the modern type of line switch to assist contactors in handling the current. However, thus far failures due to the lack of these devices have not been of such a character as to seem to make them essential.

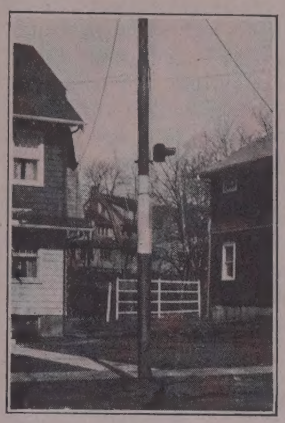
SLIDING CONTACTS TO REPLACE ROLLERS

The current collectors are the U.S. 121-A pantograph with built-up angle-iron frame and with rollers revolving in bearings as the contact device. The pantographs themselves have given no trouble and will continue to be used as originally designed. The rollers, however, which are 5 in. in diameter, are to be replaced with a sliding shoe contact. This decision was reached after extensive service tests in which the sliding shoes were found to require less maintenance and less tension in pantograph springs at the same time that they afforded a much larger contact area. Due to the two latter advantages of the sliding contact considerable savings are expected in the reduction of trolley wire wear.

J. C. McPherson is superintendent of the East Bay Electric Division of the Southern Pacific Railroad and J. H. Lockett is master mechanic.

Repeater Signals Aid Safety Car Operators

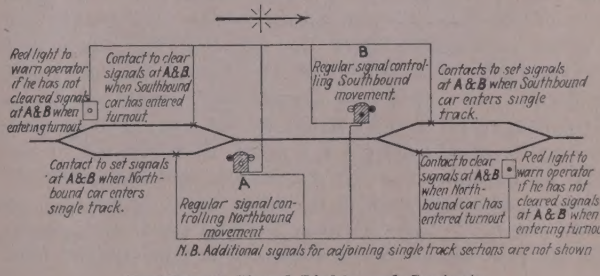
A SIGNAL that cannot be relied upon is worse than no signal at all, and on single-track electric railway lines the proper clearing of signals is second in importance only to their proper setting. If the indication remains "Stop" after a car has passed beyond the section of track which the signal is intended to protect, other cars may be held up unnecessarily. When this occurs very frequently the motormen lose confidence in the signals and sometimes proceed onto single track against a "Stop" indication, thinking only that the last car in the opposite direction failed to clear the signal. With two men on a car it is easy for one of them to watch the signal to see that it has been cleared after the car leaves the single track and enters a turnout. But with the increasing use of one-man cars throughout the country somewhat of a problem was created.



Repeater Signal Located on Pole at End of Turnout

Inasmuch as the signal which protects a car on single track against an opposing movement must be in front of the car on the siding, it will necessarily be behind the first car after the latter has reached the turnout. The operator of a one-man car, therefore, has no way of telling whether or not he has cleared the signal after leaving the single track unless he stops his car and looks back at the signal. If his car is crowded, or if low branches obscure the signal, he may even have to get out of his car to see it. Under these circumstances it is inevitable that an operator will often not take the trouble to make sure that he has cleared the signal.

The Public Service Railway of New Jersey met this situation in an unusual way, its lines being equipped with United States non-registering signals. Since with this system the first car to leave the block clears all


Red light to warn operator if he has not cleared signals at A&B when entering turnout.
Contact to clear signals at A&B when Southbound car has entered turnout.
B
Regular signal controlling Southbound movement.
Contacts to set signals at A&B when Southbound car enters single track.
Contact to set signals at A&B when Northbound car enters single track.
A
Regular signal controlling Northbound movement
Contact to clear signals at A&B when Northbound car has entered turnout
Red light to warn operator if he has not cleared signals at A&B when entering turnout
N. B. Additional signals for adjoining single track sections are not shown

Position of Signal Lights and Contacts

the signals, the rules state that there shall be only one car at a time in the block, and the motorman may no more enter against the green light set by the preceding car in the same direction than he would enter against the red of an opposing movement. So long as two-man cars were operated on the single-track lines of this company it was the custom for the conductor to look back at the signal after a car had entered a turnout and give the motorman two bells to proceed when he saw that the signal had been properly cleared. In the summer of 1920, however, safety cars began to replace the

former two-man cars on many of these lines, and trouble was experienced. To remedy the difficulty the company devised a repeater signal which would be visible to the operator on the front end of a safety car, and this device has now been installed on all lines where safety cars are operated on single track.

As an example of the way the scheme works, let it be assumed that a northbound car is entering a stretch of single track. The entrance of the car upon single track sets three signals. The first is the green signal at the point where the car left the siding. The second is a red "Stop" indication at the other end of the single track to halt an opposing movement. The third is the repeater signal, which is, like the second, at the distant siding, but some distance beyond the ordinary signal and facing toward the car which set it. When the northbound car has left the single track and entered the next turnout it passes under a contact which clears all the signals. The repeater signal shows simply a plain red light whenever the other signals are set for northbound traffic, and far enough ahead of the contact so that the operator can readily see it and know whether or not he has cleared the signals behind him. If not, the red light before him gives warning not to proceed until he has done so. This device has worked in a most satisfactory way on the Public Service Railway and has eliminated much signal trouble.

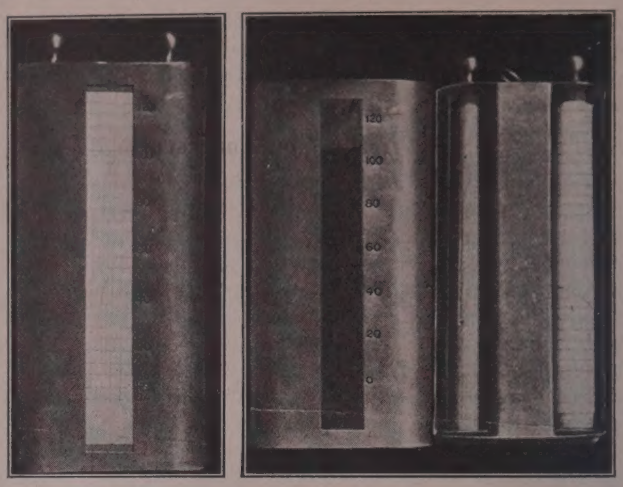
Detroit Traffic Graph Made Directly on Street

A Simple Mechanical Device Is Used by Which the Checker Records the Car Loading by Drawing a Line Along a Straight Edge

TO SAVE office labor and secure immediate interpretation of car-loading and headway checks taken on the street, the Department of Street Railways, city of Detroit, has devised the following means for recording and plotting the car-loading graph in one operation:

A strip of paper about 64 in. long by 7¼ in. wide is prepared as a record form by unbroken horizontal rules to cover passenger capacity and by short vertical rules top and bottom to cover the time intervals. The numbers of the cars corresponding to the time points are written in together with the name of the route and intersection. The length of the record portion itself is 54 in., the remaining length being required for a 5-in. ear at each end, which is cut out for the easy rolling up of the strip on a spool, as described in the next paragraph. One ear carries the necessary identification marks as shown in the illustration below.

To secure the synchronous loading check and graph, the strip is placed in an elliptical or flask-shaped container made of sheet copper and measuring 8½ in. in height, 4½ in. in width and 1⅞ in. in depth. Within the container is mounted a sliding base into which are set two spools slotted exactly like the film spools of a kodak. All that the checker has to do in loading the container is to roll up the strip on one of the spools and attach the ear to the slot of the other spool. The spool-base is then pushed back into the container, into which an opening has been cut to expose 1 in. of strip.

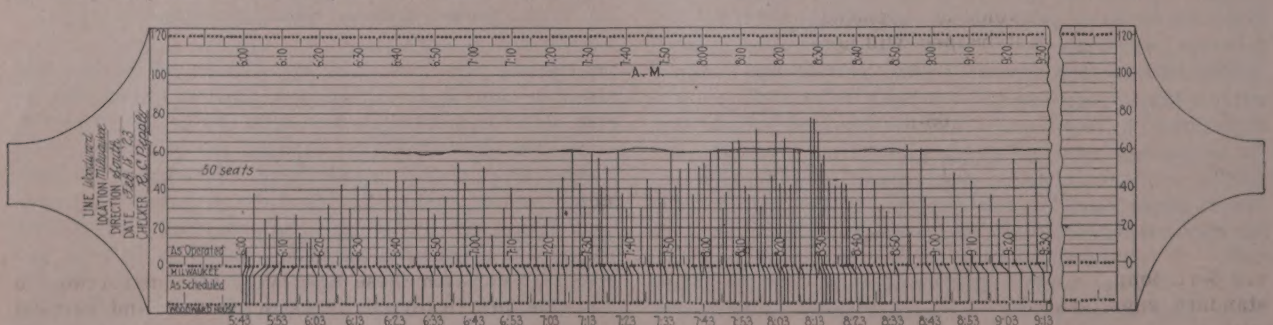


At Left, Recording Device Used in Detroit in Changing Car Loadings. At Right, the Spool Carrier, Which Embodies the Principle Used in Hand Cameras

As each successive car arrives, the checker winds up the strip by means of the spool knob and draws a "time-load" line along the straight edge on the right-hand side of the container window. The length of this line, of course, is proportionate to the passenger load. The checker is guided in drawing this line by the passenger-load scale (0-20-40-60-80-100-120) stamped alongside the container window.

Coal Investigation by A.E.C.

AT THE last meeting of the executive board of the American Engineering Council, held in Cincinnati, March 23-24, it was decided to make a nation-wide investigation on the economic value of coal storage. It is understood that both the Coal Commission and the Department of Commerce will look with favor upon such a survey. The object is "to determine the facts relating to the engineering, chemical and economic factors involved in, and their influence upon, coal storage at the mine and by large and other consumers of coal." It is expected that President Cooley will appoint a committee representative of the various groups interested, such as mining, transportation, public utilities, chemical engineering, etc.



Part of Record Strip with Car Loading Graph

Way Construction Experience in Portland

Rail Direct on Concrete Slab Has Given Best Life—Ballasted Track Has Proved Unsatisfactory—All Track Now Being Laid with Concrete Slab to Eliminate Settlement—The Details of the Construction Are Given

By F. I. Fuller

Vice-President Portland Railway Light & Power Company, Portland, Ore.

THE Portland Railway, Light & Power Company's track system consists of a total single track equivalent of 297.6 miles, 150.8 miles being paved and 35.4 miles unpaved in the city streets of Portland. On the interurban lines there are 2.78 miles of paved and 108.6 miles of open track. Of the above track 186.2 miles in Portland is 3 ft. 6½ in. gage and the balance is standard gage.

BALLASTED TRACK CONSTRUCTION NOT SATISFACTORY IN PORTLAND

In the business district the track is principally from fifteen to twenty years old, laid mostly with a 7-in. grooved rail. Some is on ballasted tie construction and some on a concrete slab, and nearly all is paved with basalt stone blocks. The most satisfactory of this old type construction has been that in which the rail was laid directly on a concrete slab with small ties about 10 ft. apart and tie rods in between.

Joints are cast welded and, while some of these joints failed due to softening of the rail head over the weld, a large proportion are still good. (See Fig. 1.)

The tracks in the residential portion of the city are laid principally with 6-in., 72-lb. tee-rail on the narrow-gage lines and 7-in., 80-lb. tee on the standard-gage lines. Ballast is either bank gravel or broken stone, drained with a 4-in. farm tile under the center of the track and connected to the street sewer at all available points. Paving is either stone, brick or concrete. Joints are 4-bolt continuous type and the rail is fastened to the ties with ordinary track spikes.

This type of construction has not been entirely satisfactory as, due to the wet climatic conditions of Portland, the track shows a tendency to settle, causing the pavement to break up along the rails. The continuous joints have become loose and it is very expensive to rebolt them where the track is paved. The track spike does not hold the rail firmly to the ties, allowing the rail to move vertically as the cars pass. Track of this type, while lower in first cost, does not last as long as the more rigid construction. (See Fig. 2.) In a climate like ours, with comparatively long and wet winters, any ballast with voids in it, placed on a clay subsoil, no matter how well drained, will not be satisfactory in hard-surface paved streets.

Our latest type of construction for tracks in the business district is with 7-in., 105-lb. grooved rail for the narrow-gage tracks and 7-in., 122-lb. grooved rail for the standard gage tracks. Concrete slab foundation 6 in. to 8 in. thick and surfaced 2 in. below ties is used. A farm-tile sub-drain under the concrete slab is connected to the city sewer wherever possible. The ties are 6 ft. long for the narrow gage and 8 ft. long for standard gage, spaced on 3-ft. centers and tamped up with 2 in. of 1-in. rock on top of the concrete slab. After the track is surfaced this fine rock is grouted. The rail is fastened to ties with 8-in. x 10-in. x ½-in. flat tie plates and 6-in. screw spikes. The rail is also held down to the concrete between ties with ½-in. x 1-in. steel stirrups bent over base of rail and extending down into the concrete about 6 in. Joints are standard 4-hole

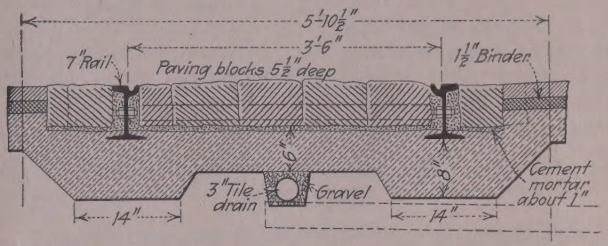


Fig. 1—Construction Installed on Washington Street, Portland, in 1892, and Still in Service

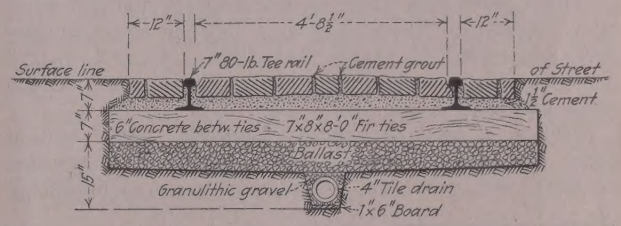


Fig. 2—Type of Track Used Generally in Portland During Past Fifteen Years

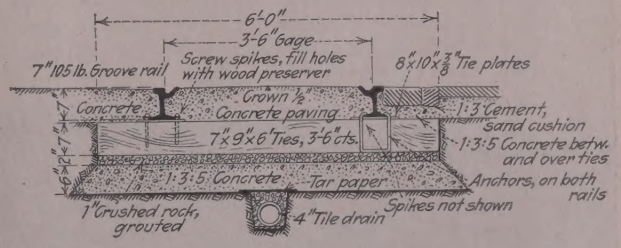


Fig. 3—The 1923 Track Construction in Portland, Employing Tie Plates, Screw Spikes and Anchor Stirrups

fish plates, electrically welded to the rail top and bottom, and the heads and nuts of the bolts are also welded to the plates. Paving is either basalt stone blocks or concrete on a concrete base between ties. Cast-iron surface drains the full width of the track are placed at all low points in grades. (Fig. 3.)

Our new type of construction for tracks in the residential districts is similar to the new type in business districts, except that 6-in., 100-lb., A.R.A. tee-rail is used and the paving is all concrete.

We expect, with these new types of construction, to eliminate practically all track settlement and vertical movement of the rail, thereby prolonging the life of the

track and keeping the surface of the street in better condition.

All special trackwork pieces are made to standard dimensions. The narrow-gage curves have a center radius of 35 ft. with 75-ft. radius switches. Our standard-gage curves have a 57-ft. radius with 120-ft. radius switches. Nearly all special trackwork is built in our own shops. The switches are all of one-piece cast-steel design, the mates, frogs and crossings of grooved guard rail being electrically welded with heavy base plates, knees, riser plates for flange bearings, etc. Steam-railroad crossings are either solid manganese, purchased from special trackwork manufacturers, or of the bolted rail type, made in our own shops.

A Graceful Steel Bridge on the P. R., L. & P. Co.'s Lines

SPECIAL TRACKWORK IN PORTLAND LARGELY HOME MADE

Spring or lock boxes made in our own shops are placed on all switches to hold the tongues in the desired position.

Three stationary shop electric welders and five portable welders are kept constantly busy on the manufacture and repair of special trackwork. All rail cutting necessary for the making of special trackwork is done with gas cutting torches.

Cast steel switches and the electric welded special work are proving very satisfactory from the standpoint of first cost, quickness of manufacture and length of service. Open tracks on these lines have rail weighing from 56 lb. to 80 lb., on 7-in. x 9-in. x 8-ft. wood ties laid on gravel ballast. Spring switches and frogs are used, and the rail joints are partly of the 4-hole continuous type and partly angle bars. Bonds are principally No. 0000 electric welded type.

During 1922 we extended our Cazadero line 5 miles to the north fork of the Clackamas River and this year a further extension of about 24 miles is being made in order to reach a new hydro-electric power plant being built by the company. These extensions are through a mountainous country and the grading work was all very heavy.

Two of our largest bridges on the interurban lines were reconstructed last year. The Sandy River bridge, which is 1,700 ft. long and 80 ft. high, was rebuilt with steel truss construction for 280 ft. and six post frame bents on concrete piers for the balance. About 865,000 ft. of timber and 278 tons of structural steel were used in this work.

The other bridge replaced was a 170-ft. wooden deck truss bridge across the Clackamas River at Faraday. This was replaced with a 190-ft. steel arch span. The deck is over 100 ft. above the river. As this was a difficult place in which to build falsework, the old wooden bridge was first stripped, the ends and decking were removed and the bridge was then lowered 20 ft., moved lengthwise 9 ft., and used as falsework during the erection of the new steel work.

Old Wood Bridge Used as Falsework for New Steel One

Los Angeles Board for Extensions, Subways and Buses

Ten Miles of Double Track on Sixteen Car Lines and Installation of Twenty-four Feeder Bus Lines Planned at a Total Cost of $5,000,000—Subways Favored for Congested District—Unification of System Suggested

THE Board of Public Utilities of Los Angeles, Calif., which for the past eight months has made an extensive study of the local traffic congestion and transportation problem, on March 20 presented its report, which was signed for the board by Walter R. Leeds, president; Commissioners J. P. Kennedy and E. F. Bogardus and Chief Engineer F. A. Lorentz.

The principal recommendations are that the two local systems, the Los Angeles Railway and the Pacific Electric Railway, construct 10 miles of double-track extensions to sixteen different street railway routes into unserved portions of the city and install twenty-four motor-bus feeder lines, totaling approximately 82 miles.

It is recommended that the Los Angeles Railway's lines be extended into Hollywood, which now is served exclusively by the local lines of the Pacific Electric system. It is proposed that certain Pacific Electric track in Hollywood, which is standard gage, be equipped with a third rail for use of the Los Angeles Railway's narrow-gage cars. Certain changes in routing and service are also included.

The report calls for immediate construction by the Pacific Electric of a subway from its Hill Street terminal to Glendale Boulevard, and claims that it is necessary that the same company's line be extended along Highland Avenue to connect with its Sixteenth Street line at Vineyard Junction.

The program for improved street car service in Los Angeles will cost approximately $4,000,000. The railway extensions recommended will cost about $170,000 per mile of double-track girder-rail construction in paved streets, or a total of $1,700,000. It is estimated that the companies will be obliged to purchase at least fifty motor buses, costing from $6,000 to $8,000 each, and employ 2,000 additional men.

The report favors universal free transfers at all points of contact, both between rail lines and bus lines, irrespective of ownership. It is recommended that the "gentlemen's agreement" between the two railways, under which neither will make extensions into the other's territory, be broken. In lieu thereof there should be a harmonius understanding between the two companies which will permit each to render the service that the city requires. Unification of the systems is favored, but the board takes the stand that this feature and the question of universal transfers rest with the State Railroad Commission along with its powers for fixing rates of fare.

The board's report, however, is opposed to the increased street car fares granted the Pacific Electric lines Jan. 1, 1922, by the Railroad Commission, which are characterized as contrary to the charter privileges of the city of Los Angeles. Under the commission's order, claims the board, this company is permitted to receive more for transporting local passengers in the city than is the Los Angeles Railway.

Commenting on the bus situation, the report states:

> The use of motor buses as auxiliaries to our existing street car service is a foregone conclusion. The vast cost of maintenance of the rail lines, including the upkeep of tracks, paving rights-of-way, erection of substations for the generation of power and the high cost of same, to which is added a very large sum in the form of depreciation, are all factors that will occasion the installation of bus-line service. Such service will greatly assist in solving our transportation problems, and if sufficiently operated will prove to be the most important adjunct to our present rail system.
>
> It is estimated that 4½ cents of each 5-cent fare that is taken in is expended in the manner stated above. Moreover, street cars move slowly and they deposit passengers in the line of traffic, while buses receive and discharge passengers at the curb. The bus is a utility within itself. It generates its own power, is flexible, accommodates as many people as the street car, moves more quickly and in every way is more adapted to the needs of the traveling public. Less than half of each bus fare is consumed in the maintenance of the system, hence a greater profit and better service.

The board states that it will take no action on the application of the People's Motor Bus Company, represented by William G. McAdoo, for a bus line franchise, since the question is to be voted on at the election May 1. The McAdoo bus interests have circulated an initiative petition, which is to go on the ballot, to repeal the present jitney ordinance prohibiting operation of buses on the congested streets. Another petition to be voted on is whether the People's Motor Bus Company shall be granted a franchise for motor bus lines on 62 miles of the city's streets.

Extensive Transportation Demands Outlined

The report also contains a memorandum dealing with the extensive transportation demands outlined by the board, which are claimed essential in solving the transportation problem. The subway problem was not gone into, however, but it was announced that the board's chief engineer soon will submit a detailed report on this subject. It is understood that subways are favored for urban and interurban traffic, costing in excess of $75,000,000. This is far more elaborate than the proposal of the Los Angeles Planning Commission submitted to the board several weeks ago. This latter plan was for a system of subways to remove the Pacific Electric's interurban trains from the congested streets.

Upon serving the two street railway companies with notice to place the proposed program in effect, the board gave them ten days in which to file replies, following which the board will formulate its recommendations to the City Council for enforcement.

President Leeds, commenting on the report, stated that he favors that part of the report coming under the memorandum, but does not approve the recommendations concerning the buses, saying in part:

> I do not approve what is said in the report about motor buses. Experience of approximately fifty cities of the United States for the past few years has shown the following conclusions in regard to motor-bus operation: (a) Motor buses as substitutes for street cars in heavy traffic areas are not satisfactory; (b) motor buses competing with street cars generally result in inferior service on the car

lines with increased fare, which causes public reaction against such competition; (c) motor buses, where operated as feeders by rail carriers in new territory not yet able to support street car service, are found to be satisfactory, and (d) motor buses are most economical where traffic is comparatively light.

In his comments President Leeds stated that while universal transfers are desirable, unless provision is made to charge for them their use will result in increased fares. He stated further that he did not believe the Board of Public Utilities should be made the catspaw to force upon the street railways and the public the extension of rail lines or the operation of bus feeders to help the promotion of new real estate subdivisions.

Following its report the Board of Public Utilities has announced tentatively the plans it proposes to recommend to the City Council for rapid transit for both urban and interurban traffic, which involve an elaborate subway and elevated system. Two distinct subway systems are called for, the first to be a "Y" system, with Pershing Square as its center, while the second forms a loop around the downtown congested district, the two systems to connect at three or more points. Both of the subway systems, as well as the elevated system, are to be arranged for four-track operation.

The plans call for bringing the interurban trains of the Pacific Electric system between Los Angeles, Hollywood, Glendale, San Fernando Valley points and other northwestern points into Pershing Square from the north by the northwestern arm of the "Y," while the Pacific Electric lines between Los Angeles and Santa Monica Bay points are to be routed over the southwestern arm of the subway.

The Pershing Square underground depot, as provided in the plans of the Los Angeles Planning Commission, also would be a dispatching point for Pacific Electric interurban trains to the southeast and northeast under the board's plans.

The board proposes that the Pershing Square "Y" subway should also be used by the local street car lines as well as by the interurbans, which, entering the city over various routes, will be afforded opportunities for transfer. Pacific Electric trains that now operate from the Sixth and Main Streets terminal, Los Angeles, for northern division and southern division points under the board's plan would operate from the Pershing Square depot through the proposed tube to the Main Street terminal, thence via viaduct to the interurban right-of-way.

It is expected that the subway and elevated plans of the Board of Public Utilities will be officially placed before the Pacific Electric and Los Angeles Railway companies when the survey now under way, contemplating the unification of the two local street car systems in Los Angeles, is completed.

Installation of six viaducts across the Los Angeles River, estimated to cost $3,801,281, have also been recommended by the board, the viaducts to be constructed at Macy, Aliso, First, Fourth, Seventh and Ninth Streets. In addition the board recommends the depression of the tracks on both banks of the river, a program bringing the total estimated cost of the project to $5,001,281. These proposed viaducts are to relieve traffic congestion and eliminate grade crossings, carrying city, county, street railway and steam road traffic. The board recommends that in carrying out this "short viaduct" plan the city, county and street railway lines should each bear 16⅔ per cent of the total cost, while the two steam roads involved would pay the remaining 50 per cent. The board claims that the "short viaduct" plan is the most favorable because the steam roads are now located on the east and west banks of the river through the industrial district.

Buffet-Parlor Car Has Novel Interior

A NEW buffet-parlor car was put in service by the Chicago, Aurora & Elgin Railroad the latter part of March. This car has been under construction for the last six months at the company's Wheaton shops. It is the first of three similar cars. The two remaining cars will be ready for service about the first of June.

Approximately $30,000 was spent in building and equipping the new parlor-buffet car. The design embodies the latest features of high-speed equipment, the underframe being of solid steel, heavily reinforced with a steel superstructure to insure rigidity and easy riding qualities. The car is driven by four 125-hp. motors, capable of speed up to 70 m.p.h.

The Tables in the Dining Compartment May Be Removed, Converting It Into a Parlor Car

It is stated that no expense has been spared in providing interior comfort, and that the car will be one of the finest examples of buffet equipment on any suburban road in the country. Richard A. Boaler of Watson & Walton, Chicago, designed the interior decorations, which provide a light, cheerful atmosphere.

The floor of the lounge smoking compartment is finished in marble effect with green, tan and black predominating, with the main or dining compartment in tan and black striped Wilton carpet. The body color and walls resemble old Grecian marble, striped in Athens green, gold and black, these bright tones being set off by a black wainscot carried up to sill height. The furnishings are luxurious reed chairs, painted and glazed in red to match the decorations.

Electric heaters, thermostatically controlled, heat the car, and Pullman semi-indirect lighting is used. Ventilation is secured by Utility ventilators. The chef's kitchen has been given special attention to secure perfect sanitation, with adequate facilities for icing perishable foods. Individual dining tables fold into compact compartments when not in use. The car exterior is painted vermillion. A new step, designed after experimentation, makes alighting at either elevated platform or street level easy for women.

Fire-Fighting Towers in Operation

Latest Practices Followed in New St. Louis Carhouse and Storage Yard

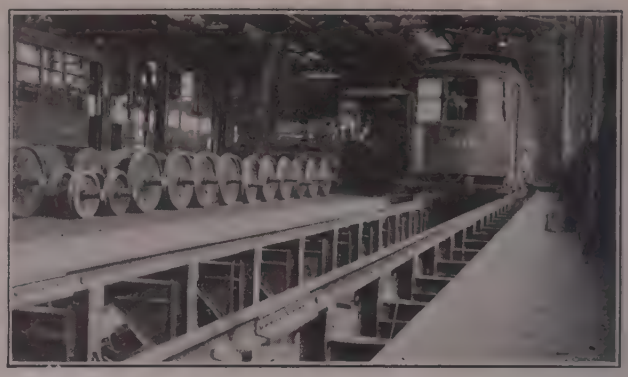
Plant Constructed for Handling Light Maintenance and Inspection Work of 125 Cars Consists of Office Building, Shop, Washhouse and Large Storage Yard—Cost Was $265,000

AN EXAMPLE of modern practice in carhouse and storage yard design is the new division layout of the United Railways of St. Louis, located at Broadway and Taylor Avenue. This plant, exclusive of the land, cost about $265,000. It consists of a two-story office building, a shop building, a washhouse and several smaller buildings, together with a storage yard having track facilities for more than 200 cars. The office building, which measures 62 ft. x 70 ft., furnishes accommodations for the divisional headquarters. In addition to the offices, it is provided with recreation rooms, shower baths, steel lockers and a rest room for the convenience of the employees. The inspection shop, which is the largest of the group of buildings, measures 81 ft. x 200 ft. The structure designed to be used exclusively for car washing has dimensions of 53 ft. x 125 ft. Sufficient space is available so that the present car storage capacity of 200 cars can be later increased to 400 by the addition of more tracks. Both the building and the yards are equipped with modern fire-protection devices, the yard protection consisting of nozzle towers so spaced that any part of the yard can be reached with a stream of water.

The washhouse and shops are laid out in a line, with a transfer table between them, so that cars can be brought in at one end of the washhouse and, after

Division Buildings and Storage Tracks

Washroom, Showing Hot Air Ducts



Track with Special Construction to Facilitate Inspection Work

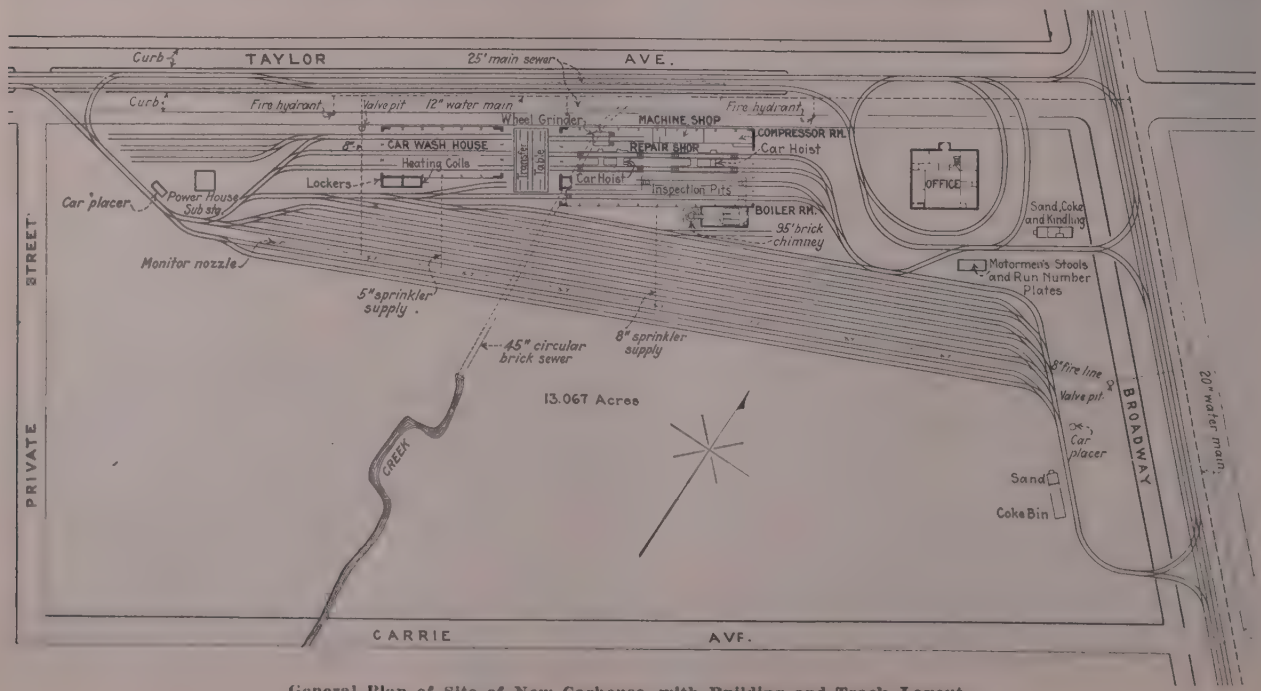
washing, moved out the other end onto the transfer table, from which they can be set on any track in the shop. On completion of the shop inspection the car is run out the front end and switched into the storage yard. Both shop and washhouse are of brick and steel construction, each having full glass sides from a height of about 4 ft. In this way excellent advantage is taken of the natural light. Both buildings are fitted with Kinnear rolling steel doors at each end.

An interesting feature of the washhouse is the method of hot air heating, the air being distributed throughout the building by means of a system of overhead ducts. The outlets of these ducts are curved, as can be noticed in one of the accompanying illustrations, so that the air blast is directed against the side of the car. This scheme has been found particularly helpful in drying the windows after washing, so that no streaks are left. Moreover, this positive system of heating has proved very efficient in heating the whole building to the proper temperature, and but a few minutes is required after the blower is started to establish the required degree of heat.

The same method of heating has also been installed in the shops. The steam for both heaters is furnished from a small boiler plant adjacent to the shop. In the shops the radiator and blower equipment is located on a specially constructed overhead platform so that no otherwise useful space is taken.

Besides the desirable arrangement of tracks for moving cars into and out of the shops, one shop track has been specially designed to facilitate car inspection work This track has a pit open on the sides as well as between the rails, and the floor adjacent to it is about 8 in. lower than the track level. With this construction it is convenient for men to sit on the floor while inspecting journals, etc. The floor being cut back in this manner allows an open, well-lighted space for storing a few brake shoes, gear cases and other parts used on ordinary maintenance work. The depth of this inspection pit is 4 ft. 6 in., while the pit under track where motors are removed is 5 ft. deep.

One corner of the shop is partitioned off to serve as an air compressor room, for the air storage system for brakes is still used in St. Louis. Having an abundance of air available, air hoists are located at convenient points about the shop. The other equipment used in the light maintenance and inspection work of some 125 cars of that division consists of a pit wheel grinder and two pit motor hoists. Machine shop tools comprise a small lathe, a drill press, a commutator slotter and a forge.



General Plan of Site of New Carhouse, with Building and Track Layout

Company Employee Organizations on Eastern Interurban

Both a Twenty-Year Club and an Employees' Association Organized Among Interurban Men—Employees' Organization Functions Wholly from Membership

THE employees of the Olean, Bradford & Salamanca Railway, Olean, N. Y., are organized at the present time into two associations, namely, the Twenty-Year Club and the Olean, Bradford & Salamanca Railway Employees' Association. The Twenty-Year Club members are all members of the employees' association and attend both the meetings of the association and their own club meetings.

The Olean, Bradford & Salamanca Railway succeeded the Western New York & Pennsylvania Traction Company after foreclosure sale in October, 1921. A potent factor leading up to the receivership of the Western New York & Pennsylvania Traction Company was a strike of the employees in 1919, at which time demands were made for a minimum wage; recognition of the union just organized, and improved working conditions, especially in the operating department. This strike, fought by the railway, ultimately resulted in a truce whereby the men returned to work upon the promise that a tentative agreement would be shaped into a definite agreement immediately. A committee of the men met the management and an increased wage was allowed, the union was not recognized and working conditions were considerably improved. The agreements signed by the men ran one year and expired. Meanwhile a receiver was appointed. He increased the wages of the men and matters remained in statu quo.

The bondholders purchased the property and after reorganization appointed R. H. Wheeler general manager. Mr. Wheeler took over his duties on Oct. 1, 1921, after having spent some time as manager for the receiver, during which he had become conversant with the situation with regard to the attitude of the men to the company. At that time the men were literally adrift and were fertile ground for another union organizing campaign.

Twenty-Year Club

Just before the new year of 1921, those men who had been in the employ of the road twenty years or more were invited to an informal dinner by the manager. He pointed out the relationship he desired to establish between the men and his office, stating frankly his views that the railway was in dire straits as to a sound financial future and that the very friendly and cordial assistance of the men to carry out the plans of a manager was perhaps the first essential toward rebuilding the road. As the manager was a total stranger to the men, he desired to build up an interchange of friendship and daily strengthen their confidence in his plans by a more or less intimate knowledge of the program to be carried out, gaining this knowledge by discussing the problems as they arose, in so far as the men could help him by a free interchange of thought in open meeting.

The men readily appreciated the frankness of the manager's position and responded quickly in the formation of the Twenty-Year Club, which to date comprises about twenty-five members. A constitution and by-laws were drawn up; neat coat lapel emblems were presented to the men by the management, and a meeting room engaged without expense to the men where meetings are held on the first Tuesday of each month. These men as seniors in the various departments of the road very readily gave of their experience and knowledge of the past affairs and became immediately an invaluable store of information to the manager in picking up the threads of local administration in the cities of Olean, N. Y.; Bradford, Pa., and Salamanca, N. Y.

Officers of the company in the employ the requisite number of years ranked shoulder to shoulder with trackmen and men in the operating department. The first president of the Twenty-Year Club was Floyd A. Garey, an experienced and capable motorman in the freight locomotive service.

On one or two occasions, the management has provided an evening of instructive entertainment through educational films or the introduction of speakers upon subjects non-technical but of interest. When the reasons were explained, local merchants readily gave of their time and thought to the Twenty-Year Club, talking informally upon interesting subjects. This also served to acquaint and interest the patrons of the road with the plans of the new management. Meetings are held in one or another of the three cities, rotating upon invitation. Spontaneously, the matter of a ladies' night came up, the idea being that the ladies, wives of the members of the club, should be permitted to participate. Since its organization, the club has enjoyed two or three ladies' nights, with the ladies as guests at an informal dinner and the members and their wives treated to a theater party by the resident members.

The Twenty-Year Club functions, as it was conceived by the manager, with increasing interest arising from within the ranks of the members and the monthly meeting is an event to which all look forward, days in advance. On the other hand, the Twenty-Year Club has been of inestimable assistance to the manager, as the employees of the road soon saw the sincerity of the relationship developed and became anxious to enjoy the same cordial understanding with the management as do the club men.

Employees' Association

In April, 1922, the Twenty-Year Club requested the employees of all ranks and departments to meet with them to form an Employees' Association. The response was so cordial that it was decided to hold the meeting after the usual operating hours of the railway and more than 95 per cent of the employees of the road were in attendance at the meeting and signed the Articles of Association.

When Mr. Wheeler came to the property, he early sensed the fact that the men lacked some form of association among themselves to build up the *esprit de corps* of the property. He felt certain that if a demonstration could be made of a sincere interest upon the part of the manager in problems of the men and an open mind as to their viewpoints, co-operation would result and a feeling be built up on the part of the men that their problems could be worked out at home without the necessity of calling in any organization to negotiate for them.

This was founded on the belief that no results achieved could be sound and durable unless both sides were convinced of the frankness of the negotiations. When 95 per cent of the men met at 12:30 midnight at their personal discomfiture to form an employees' association, it was at once apparent that the men were con-

vinced that a new epoch in management had successfully been launched and they were ready immediately to co-operate in its continuance.

As in the instance of the Twenty-Year Club, a constitution and by-laws were drawn up and officers elected, the first president being John A. Nutt, chief electrician of the property. As a little surprise to the men, at this meeting, the manager stated that he had been able to negotiate with the Travelers Insurance Company a group insurance whereby each man in the association could enjoy $500 of life insurance and $500 of accident and disability insurance, making a total of $1,000, in case of death from unnatural causes, or $500 in case of death from natural causes. In this matter, the company undertook a small percentage of the payment of the premium in accordance with the laws of the state of New York. The remainder of the insurance is paid by the men from dues in the association.

Health and disability insurance is handled by the recommendation of the insurance committee to the executive committee of the association. There is available a certain proportion of the dues set aside monthly and invested, which, at the discretion of the executive committee, can be donated to needy members in the form of a lump sum payment or a weekly indemnity. This method of handling the health insurance results in an individual inspection of each needy case and brings to the attention of the whole association any of its members in outlying points who are out of the service because of the misfortune of illness, either individually or in their families. Under this arrangement less than 10 per cent of the fund has been distributed, whereas, by other methods of handling the fund, it would have been possible to dissipate the fund because of trivial demands upon it.

An emblem was decided upon, and, with each certificate of membership and insurance policy, this emblem was distributed by the association to its members. The association has met by invitation in the cities served by the company. There has developed a considerable spirit of rivalry between teams of the association's athletic activities in the various cities. Whenever a meeting is held away from the Olean headquarters, there is always a desire to witness the events which transpire during the evening, bringing out a large attendance. The railway in each case is very pleased to furnish special car service as there are always employees available to operate the equipment.

One of the standing committees of the Employees' Association is a company relations committee. This committee has met the management in only one instance in the past sixteen months and then for an informal discussion of a new ruling promulgated relative to labor passes, in order to determine more accurately the individual application of the pass ruling. When the committee left the discussion, each member pledged himself as in exact accord with the ideas of the management and agreed to constitute himself a committee of one to disseminate the discussion among the ranks of the employees. In consequence the matter was never again questioned on the road. This incident proved the success of the theory of having a committee handle the matters with the employees after they have become convinced of the intention and spirit of the ruling.

In no instance where discipline has been necessary has there been any request for a revision of the decision upon the part of the company relations committee, and to the knowledge of the management the company relations committee has never been approached to request a hearing.

These employee organizations function wholly from their membership. The working of the new arrangement shows the men to be in complete accord with the policies and plans of a management which is appreciative of the efforts of the "human" spokes which maintain the integrity of the wheel and make it easy to keep rolling.

The sincerity of the men and the management under the new arrangement has won the liberal support of the business men, who in turn have helped in their way to raise the standing of the electric railway men to a new status in their communities.

Average Automobile Carries Less than Two Passengers

THE Pacific Railway Advertising Company recently conducted an investigation to determine the average use of passenger automobiles and street cars. On Saturday, Nov. 4, 1922, investigators at principal street intersections in the cities of Seattle, Portland, San Francisco, Oakland and Los Angeles checked 4,101 automobiles carrying a total of 6,730 passengers. This is but 1.64 passengers per automobile. The street cars carried 700 revenue passengers a day on the average. Ten street cars would, therefore, transport 7,000 people a day, which is more than is carried by 4,101 automobiles with the average load.

With the exception of Portland, Ore., more than half the automobiles checked carried the driver only. In Portland and Los Angeles approximately 80 per cent carried but two persons, while in San Francisco, Oakland and Seattle approximately 90 per cent of the automobiles carried two people. The figures of the investigation follow:

	San Francisco		Oakland		Los Angeles		Seattle		Portland	
	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent
Driver only....	1,102	64.0	241	57.0	586	52.0	259	54.0	136	37.0
Driver and 1 passenger...	453	27.0	143	34.0	308	28.0	170	35.0	161	43.5
2 passengers.	89	5.0	25	5.5	133	12.0	37	7.7	43	12.0
3 passengers.	34	2.0	11	3.0	57	5.0	10	2.1	23	6.0
4 passengers.	14	0.8	2	0.5	35	3.0	1	0.2	5	1.0
5 passengers.	*16	0.9	...	....	....	....	...	....	2	0.5
6 passengers.	*5	0.3	...	....	....	....	...	....	...	....
	1,713	100.0	422	100.0	1,119	100.0	477	100.0	370	100.0
Passengers....	2,612		656		1,994		755		713	
Average people per car.....	1.52		1.55		1.78		1.58		1.92	

* Jitney buses included. Delivery trucks not included.

The investigation also developed that only 50 per cent of the owners of pleasure automobiles use them daily for business purposes. Only 18 per cent of the women of the family use them for shopping purposes, while 39 per cent of the men owning pleasure automobiles use the street cars twice a day going back and forth between their homes and their offices, and 13 per cent use the street cars most of the time. Of the women owning automobiles, 51 per cent use the street cars from three times a week to as often as twice a day.

The principal reasons advanced by automobile owners, both men and women, for their extensive use of street car transportation are that they find the street cars more economical, and that they are assured of safety from reckless drivers and speeders. Many of them stated that parking spaces were too difficult to find in the downtown section of the city, and the street cars were more convenient for shopping.

Additional Light on the Detroit Municipal System

Consultant's Leaflets Criticise Handling of Accident Cases and Purchasing by Established City Departments — Financial Methods for Amortizing Purchase Price Compared with Glasgow and Toronto — Renewal Fund Held Necessary Only on New Construction and Equipment

THE fifth, sixth and seventh bulletins prepared by Walter Jackson, consultant, for enlightening the public of Detroit, and which complete the series prepared by him, are now available. Other bulletins in this series have been abstracted in the ELECTRIC RAILWAY JOURNAL for March 3, 1923, page 371, and March 24, 1923, page 508.

The fifth bulletin in the series treats of the claims division. Mr. Jackson states that the claim department of the Municipal Railway System embodies the usual organization except that the trial attorneys are a part of the office of the corporation counsel. He states that this is apparently a disadvantageous difference. On the other hand, he states, the claim department has taken over two functions that hitherto have been part of personnel work of the transportation department. These are responsibility for the physical standard of applicants for platform jobs, and attention to certain personal features in the home life of the platform men.

Mr. Jackson states: "The claim department, although held responsible for the sums spent to compensate claimants for damages, suffers a serious disadvantage of having no direct control over the counsel who represent its side of the case in court. According to the present interpretation of the charter provisions, such legal work is to be done through the office of the corporation counsel, who, nevertheless, charges the cost of such services to the Department of Street Railways." The consultant quotes several sections from the street railway amendments to the charter, adopted in 1920, and says that to him these clauses mean that the electric railway management should have sole and immediate control over these expenditures for claims; or at the very least, the department should have the right to designate such individual counsel in the office of the corporation counsel as it considers most capable of conducting its litigation. He states that the present method is bound to involve much unnecessary labor and duplication of effort.

AUTOMOBILES CAUSE MAJORITY OF ACCIDENTS

Mr. Jackson then discusses the causes of accidents, giving several tables for accidents from September, 1922, to January, 1923, inclusive. These figures are collected in the accompanying table:

CLASSIFICATION OF ACCIDENTS BY MONTHS

Month	Total Accidents	Automobile Collisions	Car Collisions	Step Accidents	Passengers Carried
1922 September...	1,819	1,240	78	107	35,770,063
1922 October.....	1,890	1,329	92	103	37,752,445
1922 November...	1,900	1,384	99	102	37,103,301
1922 December....	2,499	1,805	197	126	38,258,194
1923 January.....	2,636	1,864	182	133	40,196,401

Commenting on the record, Mr. Jackson says: "No wonder that the claim department has taken the offensive and is suing automobile owners for damages to street cars! The department is permitted to sue directly in the justice court. Since May 15, 1922, the day of taking over the Detroit United System, about $3,000 has been collected amicably without suit. Should citizens sit on juries in which automobile collision accidents are involved—not unlikely when 70.7 per cent of all January accidents were due to automobiles—they can reflect on the fact that it is not customary for the trolley to careen out of its trackway to strike an auto; and that the driver of the street car is entitled to the benefit of the doubt because he was not allowed to run a car until he had passed a series of physical and intelligence tests. Furthermore, the apparatus of a street car, as regards stopping and starting, is not only the simplest known but is also subject to regular inspection—something that cannot be said of the individually owned car."

Mr. Jackson says that in the extremely hazardous month of January there were 61.6 accidents per 100,000 car-miles and 6.59 accidents per 100,000 revenue passengers.

OVER 3 PER CENT OF GROSS PUT IN ACCIDENT RESERVE

Regarding reserve funds for accidents, Mr. Jackson states that the Department of Street Railways has continued the practice of the Detroit United Railway of setting aside 3 per cent of the gross earnings as an accident reserve, aside from the cost of conducting the claim department. He gives figures showing that for the months of July to December, 1922, inclusive, the department has set aside 3.3 to 3.6 per cent of the gross for this purpose. Payments from the fund have been materially less than the amount reserved, since old cases under the Detroit United régime are not included in the statement, and claims so far have been made in less than one-fifth of the accident cases, while it is estimated that in 1921 the D.U.R. had claims up to one-third of all accidents.

Mr. Jackson says that the liberal policy of the Department of Street Railways, as in paying the time of platform men when they testify, is reflected in the comparatively small number of blind accidents. It is said that co-operation with the coroner's office is closer knit than in the days of private operation.

Mr. Jackson devotes considerable space to a discussion of the methods of handling accidents by the claim department. These are, in general, the same as those of many street railways in the United States. The bonus system, by which carefully trained men are rewarded for accident reduction, is also described. The consultant states that he has little faith in the enduring good of "safety week" and "similar ballyhoo campaigns." The best results are going to come from making the old equipment safer, teaching the men the correct principles of controller and brake operation,

providing the incentive of line comparisons and of individual bonus plants; and, finally, of persistent work with those who are involved in nearly three-fourths of all accidents—the autoists.

Practices in Handling Supplies

Bulletin No. 6 deals with the supply division. Mr. Jackson states that in Detroit no purchase exceeding $500 may be made without advertising for bids, and that this limitation needs some modification to assure the most successful conduct of the Department of Street Railways. For example, lubricating oil is sold on a service basis; and to a lesser degree, this combination of material and service applies to bearings, trolley wheels, etc. He states that he does not wish to imply that the disadvantage of advertising for bids is peculiar to municipal operation. Perhaps the strongest argument that can be offered for permitting greater purchasing freedom is that the city's accounting system is wide open, and any one who questions excessive costs can have access to public documents.

Centralized purchasing is stated to have many benefits. Many of the stores cover several municipal departments and the street railway and other departments can draw upon common sources for certain supplies, such as crushed granite or cement, in addition to their smaller local stores.

All purchasing is done through the department of purchases and supplies of the city. Mr. Jackson goes into considerable detail in describing the requisition system. He states that the concentration of purchasing and storekeeping is an improvement over the practice of the Detroit United Railway, which maintained several independent storekeepers for the track, overhead and car maintenance departments, who were checked by assistant auditors or controllers at the main office.

The centralized stores plan also is said to save much mileage in the transport of goods to several departments. The city's stores division took over four service cars from the Detroit United, and has bought fifteen flat cars at a cost of $175 each, which have been fitted up for trailer use at an additional total cost of $500.

A considerable part of the bulletin is taken up with a discussion of the improved method adopted by this department for handling scrap. It is stated the salvaged material will bring $200,000 to $300,000 a year.

Finance and Auditing

In Bulletin No. 7 Mr. Jackson discusses the financial practices of the Department of Street Railways. Regarding a municipal loan he states that a municipality is compelled by law to set up a sinking fund whereby the loan will surely be paid back on the date the bond matures. Continuing, he says:

"Private utilities have not been compelled to do this, although it certainly would have been better for electric railways especially if they had been. What they generally did may be explained in this homely fashion:

"A person borrows $10 for three months. He pays interest regularly, but cannot restore the principal when the three months are up. So on the strength of his faithful payment of interest, he borrows $12 from some one else for another three months, using $10 to wipe out debt No. 1. Again he pays interest faithfully and again he is unable to restore the principal. Thereupon he uses his credit again to borrow $15, pays back the $12 and begins the merry-go-round again until some catastrophe makes it impossible for him to pay continually increasing interest charges. That is the way most electric railways were financed for many years, deluding themselves with the notion that the plan was going to come out all right through the increased earnings from a growing community."

Contrasting this with the terms of the Detroit purchase, Mr. Jackson continues:

"The purchase price [of the Detroit United Railway] exclusive of inventory, was $19,850,000. Toward this sum it [the city] made an initial down payment of $2,770,000 secured not from railway revenue but from the $4,000,000 bond issue authorized by a vote of the people on April 17, 1922."

It is stated that the department has already paid $3,770,000 to the Detroit United, of which sum $1,000,000 came out of earnings within seven months. Preceding the purchase of the D.U.R. and the $4,000,000 bond issue, which included the down payment of $2,770,000 and $400,000 for supplies, was the original $15,000,000 bond issue authorized by the vote of the people on April 5, 1920. This money was voted for the purpose of building and equipping entirely new lines in the outer area of Detroit, but with it were built 63 miles of track, an office building and carhouse were put up, and 250 safety cars and fifty Peter Witt cars purchased. The remainder of about $1,000,000 was left as partial payment for 200 Peter Witt cars bought for the system as a whole.

Mr. Jackson quotes from the report of the Glasgow Corporation Tramways for the year ending May 31, 1918, during which interest and sinking fund payments were reduced to zero. He says that payments into the sinking fund from 1896 to 1917 totaled £3,833,157. The direct sinking fund payments totaled only £1,506,267, the remaining £2,328,890 coming by transfer from the depreciation and permanent way renewals fund. He states that on the same basis as Glasgow, Detroit would have paid less than $500,000 a year against the purchase price instead of $1,000,000 a year. He says that the city of Detroit is paying so rapidly for its street railways that the older and major portion will be only a minor capital charge after ten years.

"This period is so short," says Mr. Jackson, "that one may well question the justice of a depreciation fund particularly when the property itself was taken over at a very low price regardless of its run-down and largely obsolete condition.

"As a matter of fact, a private company would have thought it worth $10,000,000 merely to have the right to handle the mass transport of the fourth and fastest-growing city in America. If every car and piece of track bought from the Detroit United has to be replaced with new, additional capital, the purchase would still be a bargain because of the wonderful traffic possibilities of Detroit."

To indicate how little new money the city of Detroit has put into the Department of Street Railways to make the D.U.R. lines as modern as those built by the department, he contrasts it with Toronto. He states that the Toronto lines built by the city before purchase cost $2,750,000, whereas Detroit's new lines cost about $14,000,000. The total investment in the Toronto lines, including some $25,000,000 of new construction, is given as $29,481,000. Adding to this the arbitration sum for purchase of the Toronto Railway, of $11,000,000 to $12,000,000, makes a total cost to the city of Toronto of some $41,000,000.

Considerable space is taken with quotations from "Service at Cost Plans," by Harlow C. Clark, to show that he thinks writing off the investment an unfair burden on the present rider so long as there is a depreciation fund.

Mr. Jackson states that such an outcry was raised at the last election that the plan for relieving the Department of Street Railways of paving charges was rejected.

Mr. Jackson says that a depreciation fund is justifiable only on the new construction and equipment of the department of street railways. He continues as follows:

"The sharpest criticism directed at the financing of the Department of Street Railways has been the failure to set up a depreciation and renewals fund, although the critics have been calm about the rapid rate of amortization. One could easily argue that if amortization is a gift for the rider of the future by the rider of the present, why not equalize matters by simply keeping the property up to safe and efficient operating standards? In short, repeat the ancient claim that property was being kept 100 per cent efficient and that a depreciation fund for something that wasn't allowed to depreciate was a joke.

"As a matter of sound finance, however, one must set aside a depreciation and renewals fund because one must be prepared to meet changes in the art. A private company may take the view that it is better to have a satisfactory depreciation fund than a proper sinking fund, but a community lives not only for its citizens of today but for those of tomorrow. It must, therefore, in the absence of a profit-seeking motive carry both classes of charges.

"In the case of Detroit, this is far from meaning that the depreciation and renewals fund should cover all of the existing property. On the contrary, that secured from the Detroit United Railway was bought so cheaply and is to be paid for so quickly that a depreciation fund is unnecessary. The only way to look at most of this property is that it is something to be replaced gradually with entirely new parts to be supplied legitimately out of new capital or, in part, out of surplus earnings. The position is not unlike that of the Boston Elevated Railway as expressed in the Jan. 2, 1923, report of the Department of Public Utilities of Massachusetts (quoted on page 201, ELECTRIC RAILWAY JOURNAL, Feb. 3, 1923) where the commission says: 'In fixing the amount for depreciation, the property excluded from consideration was that listed as obsolete, not used or non-depreciable (like land) and that older than the estimated life.'

"If this criterion is applied to the Detroit United purchase and the cost of said purchase taken into consideration, there would be very little left to call for a depreciation fund."

To show that a depreciation fund should be set up only on the new construction and equipment put in by the Department of Street Railways, Mr. Jackson compares Detroit with the cities of Boston, Glasgow and Chicago:

"Taking Boston and Glasgow standards for guidance the highest rate of depreciation for the cars, amounting so far to a total of $2,241,275, would be 5 per cent, or roughly $112,000 a year. The rate of depreciation on the type of track used should not exceed 2 per cent to 3 per cent, while the buildings would carry no more than 2 per cent. The land purchased by the department naturally has increased in value because of the new transit facilities in the neighborhood.

"Suppose we were to take the highest figure quoted by the commission, namely, 3 per cent of the investment in road and equipment complete as used by the Chicago Surface Lines, then 3 per cent of the $14,000,000 actually at work now would be $420,000."

Mr. Jackson says there would be no trouble in finding the $420,000 for a depreciation and renewals fund, nor in finding twice that amount, because in the six months of full system operation, July 1-Dec. 31, 1922, the surplus, after all overhead charges, injuries and damage reserves, etc., was $512,278, or at the rate of $1,024,556 per annum.

Concluding, Mr. Jackson says: "From the viewpoint of public policy, it is also better to put surplus into funds for renewals and enlargements than to give a wrong idea that the surplus should be used to reduce taxes or make premature reduction from a fare that is either the lowest or next to the lowest big-city fare in the United States."

Speeding Up Surface Cars in London

THE London County Council is readjusting the motor equipment of its cars with a view to obtaining higher schedule speeds. Results secured with cars recently built and fitted with larger motors than had been used previously showed that considerable economy was effected in cost of operation while higher speeds and a better service were provided.

At a meeting of the Council held on March 13, it was decided that 200 cars, which have been in use since 1907 to 1921, shall be fitted with 60-hp. motors in place of 42-hp. motors. The motors released will be used to replace 30-hp. and 35-hp. motors on cars which have been in operation for twenty years. The changes will be made first on the lines which are located south of the Thames.

A probable result of the change in motor equipment will be the withdrawal of trailers from the southern route to determine whether the faster cars can handle the rush-hour traffic. If they are successful the trailer service will not be restored, as there was considerable opposition to its inauguration, and sanction to furnish it was obtained only after a hard fight in Parliament. When this sanction was obtained the schedule speeds were low, but the average speed is now reported to be more than 9 m.p.h.

Power Supply for British Electrification

THE London Electric Supply Corporation plans immediately to extend its power station at Deptford to enable it to supply the 80,000,000 to 100,000,000 kw.-hr. which will be required annually for electrical operation on the southeastern section of the Southern Railway. Before the recent amalgamation, this section was the Southeastern Railway. The Supply Corporation secured a contract covering fifty years supply of all of the energy required for the operation of the first section of the suburban lines of this railroad. The contract is the outcome of a recent decision of the Electricity Commissioners adverse to the erection of a power station by the railroad. Announcement of the contract was made by the chairman, W. H. Wilson, at the annual meeting of the London Electric Supply Corporation, held on Feb. 23.

The Readers' Forum

When the Bus Will Replace the Urban Railway

GENERAL ELECTRIC COMPANY

SCHENECTADY, N. Y., April 10, 1923.

To the Editors:

I want to congratulate the writer of the editorial in the last issue of the JOURNAL entitled "When the Bus Will Replace the Urban Railway." You know very well what my views on this subject are, and I want to say that I have never seen a more comprehensive and yet more concise statement of the facts in the case as they appear to us as a result of all of our studies and experience. I think that had the railway advocates in Saginaw been able to express their case as well as this writer has done, they might have had a better chance of success at the election. I think this supplements very admirably the answer James W. Welsh recently made to an article in the *Wall Street Journal*, and I think the whole railway industry owes you a vote of thanks for its publication. J. C. THIRLWALL.

Connecting Armatures on the Ground Side

SOUTHERN PUBLIC UTILITIES COMPANY

CHARLOTTE, N. C., April 6, 1923.

To the Editors:

We had considerable trouble on our cars, due to flashing over of the motors. Considerable oil and grease would collect around the end of the commutators on our old-type motors. This caused flashing, and the motor parts were often badly burned and sometimes the armatures were grounded. After much experimenting we tried placing the armatures on the ground side and grounded the brush-holder instead of the field coils. Motors with these changes have now been in service over three months and our motor trouble has been reduced one-third.

Perhaps this information may be of use to others who are having similar trouble.

W. B. OSBORN, Master Mechanic.

Suggestion to Prevent Theft of Incandescent Lamps

SUSQUEHANNA TRACTION COMPANY

LOCK HAVEN, PA., April 4, 1923.

To the Editors:

Referring to your issue of March 24 in which "Executive" refers to method for stopping theft of incandescent lamps, some years ago I called the matter to your attention with the suggestion that theft could be stopped by the use of the left-hand thread in the receptacle instead of the right-hand thread as ordinarily used.

A representative of one of the largest lamp companies informed me that lamps were furnished to European trade with left-hand thread, but otherwise identically the same as the lamps furnished in this country. It was also stated that the manufacturers of sockets and receptacles made them both with right and left-hand threads. The right and left-hand thread portions were stated to be interchangeable so that the present right-hand receptacle could be changed quickly to left-hand type with almost negligible expense.

I believe that this offers the ideal solution of the problem and suggest that the ELECTRIC RAILWAY JOURNAL take the matter up with the respective manufacturers and then lay the facts before your readers. It is believed that this will be well worth while.

HAMILTON BALUSS, General Manager.

Schedule Dials of Houghton County Traction Company

WHEN traffic possibilities do not permit short-headway service, the next best thing is to make sure that the public knows exactly when the cars are available. With this thought in mind, S. B. Tuell, receiver of the Houghton County Traction Company, some time ago had installed sets of schedule dials at various places on the system. Such dials are especially

Dials Over the Sidewalk Indicate When Cars Pass in the City of Houghton

useful in the case of service between the twin cities of Houghton and Hancock, for while the schedule calls for four cars an hour it is necessary to space the cars at unequal intervals. An accompanying illustration shows a set of such dials mounted on a steel pole.

Besides giving the public appreciated information as to the service, the dials are a continuous advertisement of the electric railway's service.

The fortieth anniversary of the inauguration of tramway service on the Huddersfield (England) Tramways System was celebrated recently. According to the *Electric Railway & Tramway Journal*, the first vehicle was a steam-driven car, horse cars being added later. Steam traction, however, proved preferable to the use of horses and was used until the time of the electrification of the system in 1902. The corporation now has 126 cars and ten omnibuses in commission.

Association News & Discussions

Spring Convention of A.I.E.E.

THE 1923 spring convention of the American Institute of Electrical Engineers will be held at the William Penn Hotel, Pittsburgh, Pa., Tuesday to Thursday, April 24 to 26. The keynote of the program will be the operation, control and protection of transmission and distribution systems. Technical sessions will be held Tuesday afternoon and evening, Wednesday morning and afternoon and Thursday morning. A banquet will be the feature on Wednesday evening and an inspection trip to the Westinghouse Works on Thursday afternoon and evening. For those who wish to remain over, other inspection trips will be arranged for Friday.

Massachusetts Safety Conference

THE Massachusetts Safety Council will hold its second annual state conference in Springfield, Mass., on April 25-26, probably at the Hotel Kimball. The first day will be devoted to accidents on the highway, with two or three general safety topics. Thursday morning will be assigned to industrial accident problems, with several notable speakers, and the balance of the day will be devoted to considerations of fire prevention.

National Conference on City Planning

THE fifteenth annual conference on city planning will be held at the Southern Hotel, Baltimore, Md., on April 30 and May 1 and 2. The conference will be entertained by the city of Baltimore in co-operation with many civic and professional organizations. Among the papers to be presented will be one on "Inter and Intra Urban Transit and Traffic as a Regional Planning Problem," by George A. Damon, Pasadena, Calif. Other topics to be considered are terminals, zoning, regional planning, and parking of automobiles.

Canadian Association Planning for Convention

ALTHOUGH the date of the next convention of the Canadian Electric Railway Association has not been set, it may be held early in the present summer. The executive committee has therefore appointed convention committees. An exhibit will be a feature of the convention as in 1922, when the first and highly successful exhibit was held in Quebec. A representative committee of operating men and representatives of manufacturers have been appointed to arrange for the exhibit. W. R. McRae, Toronto Transportation Commission, will be chairman of the entertainment committee and will select the other members. The president of the association, Major F. D. Burpee, will arrange for the papers to be presented at the convention. As decided earlier, the convention will be held in Toronto.

Gear Manufacturers to Meet

THE seventh annual meeting of the American Gear Manufacturers' Association will be held in Cleveland, Ohio, April 19 to 21, with headquarters at the Hotel Cleveland.

Among the papers and addresses which will be given are the following: "What Does the Microscope Tell Us?" by E. C. Smith; "Grinding and Measuring Involute Gear Teeth," by E. J. Lees; "The Gear Testing Machine," by Wilfred Lewis; "Industrial Relations," by Frank A. Scott; "Some Thoughts of an Investment Banker on the Gear Business," by Owen A. Locke. There will also be a conference on conditions in the industry.

Wood Preservation

A MEETING of the Engineering Association committee on wood preservation was held at headquarters in New York City on April 13. The subject of discussion was the specifications for wood preservatives, particularly with reference to the methods of testing. The new test for coke residue was approved, subject to similar action by the A.S.T.M. at its June meeting. This test eliminates the glass bulb and utilizes the platinum crucible. The same action was taken with regard to the elimination of the specific gravity clause in the specifications for coal tar, creosote oil, creosote coal tar mixture, coal tar oil for wood paving blocks and distillate oil for paving blocks.

It was decided to suggest an investigation as to the opinion of member companies regarding the relative value of the flask and the retort in distillation tests.

The meeting was attended by H. H. George, chairman; A. P. Way, vice-chairman; M. J. Curtin, W. H. Fulweiler, E. F. Hartmann, E. A. Hoffman and E. L. Morier.

American Association News

Manufacturers' Committee Prepares Booklet

THE committee on co-operation of manufacturers of the American Association, of which E. F. Wickwire is chairman, has prepared a readable, instructive and typographically attractive booklet for distribution by manufacturers among their employees. It is entitled "An Old Friend Now Is Getting a Living Wage," and gives the reader actual data as to present electric railway operation. The "Old Friend" is, of course, the electric railway. The booklet is designed to enlist the co-operation of employees of manufacturers in obtaining a square deal for the electric railways, their customers.

Copies of the booklet can be obtained at association headquarters.

Inductive Co-ordination Committee Meets

THE sub-committee on inductive co-ordination of the power distribution committee, American Electric Railway Association, met at Purdue University, La Fayette, Ind., April 5. Three of the four members were present, John Leisenring, chairman; Prof. D. D. Ewing and A. Schlesinger. At this meeting the replies to data sheets sent out requesting information on transmission line parallels with telephone circuits were reviewed and discussed and a more elaborate letter requesting information in greater detail prepared.

It was the consensus of opinion of the sub-committee that the matter of inductive co-ordination was one that had been more or less neglected by the American Electric Railway Engineering Association. Hope was expressed that member companies will give the letter, which they will shortly receive, the attention it deserves, as the entire subject is of great interest to the association as a whole as well as to the individual members.

New Statistics Available

THE following special reports have been prepared by the bureau of information and service of the American Association and are available to member companies in good standing upon request:

Traffic Ratios: Statement showing in tabular form the riding habit, the average fare, average speed, revenue passengers and car-miles per mile of track and per car operated, revenue per mile of track, operating ratio, passengers per car-mile, proportion of transfer passengers and operating income per mile of track of more than 300 companies divided into city and interurban groups. Each group is further subdivided into three parts according to the sizes of the companies.

Bus Specifications and Operating Costs: Gives specifications of all buses of American make, and also contains the 1922 operating reports of the London General Omnibus Company, the Baltimore Transit Company, the Chicago Motor Bus Company and the Washington (D. C.) Rapid Transit Company.

One-Man Car Operation: Contains complete list of companies operating one-man cars, showing separately those operating one-man cars exclusively. Also gives a statement of the average cost of operation with one-man cars based on reports for 1922 of companies operating only one-man cars.

Treatment of Depreciation Reserve Funds: Abstracts of court and commission decisions fixing and discussing the proper disposition and use of these funds. Includes both electric railway cases and cases involving other public utilities.

In addition to the above, supplements to the Wage Bulletin, Fare Bulletin, and Cost of Living Studies have been prepared, bringing these sources of information down to date.

Maintenance of Equipment

Unusual Block Signal Installation

By H. B. Char ers
Portland Railway, Light & Power Company, Portland, Ore.

THE Portland Railway, Light & Power Company recently had occasion to employ a rather unique arrangement of United States, Type G-1, trolley contactor block signals, to cover a special situation where it was required to furnish protection for a train entering a block from an intermediate switch.

While in most cases of this kind it probably would be advisable to divide the track into two blocks, in this instance the distance was too short and local conditions, such as the presence of two curves and a deep cut obscuring the view, further complicated the proposition.

In Fig. 1, *A* and *C* were the original limits of the block and an additional signal was installed at *B* to enable trains to enter the block from a gravel pit, located on the spur, without backing to *A* to set the signals. When a southbound train takes the block at *A* the motorman receives a proceed indication of a yellow light and a yellow semaphore blade and the signals at *B* and *C* show a red light and a red semaphore.

A train taking the block at *B* displays a stop signal at *A* and *C*. Likewise a northbound train is protected at *A* and *B*.

When a car passes out of the block at either location the signals are restored to normal, i.e., no lights or semaphores showing.

In the wiring diagram, Fig. 2, it will be seen that the original connection of No. 2 wire was changed to the opposite side of coil *C*, thus causing the signaling circuit to be interrupted at the entering end only instead of at the leaving end of the block.

This was necessary because under the previous plan of connections interrupting the circuit at the leaving end of the block left one red signal in circuit, thus holding magnet *A* in the energized position.

Putting the two red signals in multiple required additional terminal resistance, which was provided by substituting one 550-ohm tube for the two 175-ohm tubes normally in the signal.

Sixty-four-watt carbon lamps are used behind the yellow lens and 36-watt Mazda lamps behind the red.

This arrangement has been in service for some time, with no failures as yet reported.

Fig. 1—Signals Arranged to Protect Cars Entering Block from Intermediate Switch

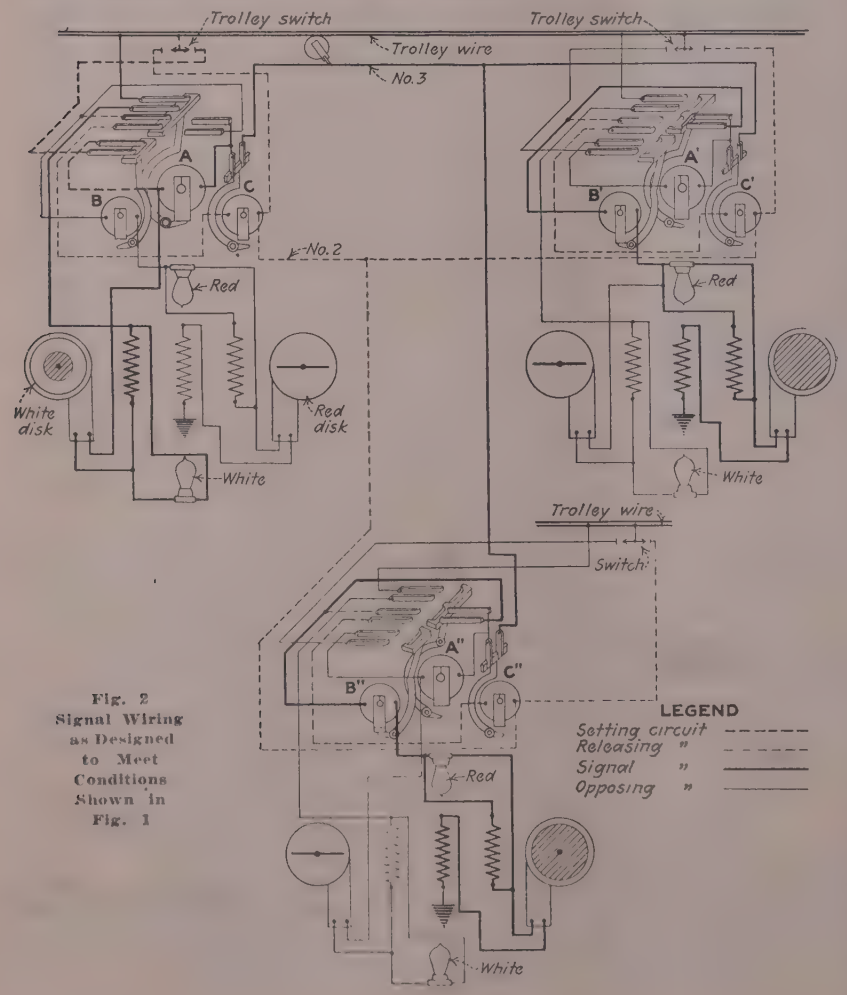


Fig. 2 Signal Wiring as Designed to Meet Conditions Shown in Fig. 1

Dipping and Baking Armature Coils

By John S. Dean
Renewal Parts Engineering, Westinghouse Electric & Manufacturing Company

IT IS the unanimous opinion among railway operators that the treatment of armature coils by dipping them in a good grade of insulating varnish, and then baking them, greatly improves the insulation and lengthens the life of these coils in service. In this connection, in a great many cases, there is very little thought given to the many details associated with these operations, but

experience has shown that these are essential in order to get the best possible results from this method of treatment.

One important point which has been found to be very necessary, and that should be given some consideration, is to see that the individual coils are separated during the dipping and baking operations. When the coils are arranged as shown in an accompanying illustration, the varnish is able to reach all exposed surfaces of the coils. This permits an even penetration of the insulation when they are dipped in the tank of varnish.

Heat Reaches All Surfaces If Coils Are Properly Separated

Likewise, when the coils are placed in the baking oven, arranged as shown, the heat from the oven is better able to reach all of the treated surfaces of the dipped coil, and the varnish is more equally and uniformly baked. This precaution in connection with this treatment requires considerably more labor in the handling of the coils and additional equipment, which increases the cost, but the improved insulation of the finished coil warrants this additional expense.

It is very common practice, in connection with doing this work, to dip and bake such coils in bundles, which is cheaper and tends to speed up the work, but produces questionable results.

Other details in connection with this work which should be given some thought are as follows:

1. *Quality of Baking Varnish Best Suited for the Work.*—The varnish should possess a high dielectric strength and be acid, oil, and moisture resisting. When baked, it should finish, or set, with a hard surface, having considerable flexibility, which makes it firm in resisting mechanical injury.

2. *Specific Gravity or Density of the Varnish Must Be Kept Just Right.*—If the varnish is too thick, it will not penetrate the insulation, and if too thin, it will lack body and be of little value in improving the dielectric strength of the insulation of the finished coil.

3. *Time of Baking.*—If baked for too short a time, the varnish will not set properly, and if baked for too long a time the fibrous insulating materials may be damaged.

4. *Temperature of Baking Oven.*—If the temperature is too low the varnish will not set, and you may have coils that are wet inside. If baked at too high a temperature the cotton insulation may be damaged, causing it to disintegrate rapidly.

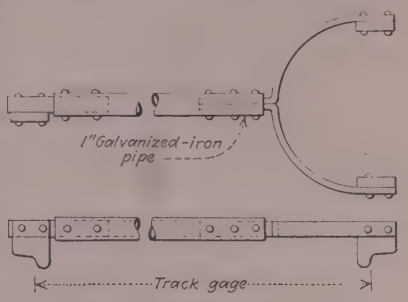
5. *Ventilation of the Oven.*—Unless proper ventilation of the oven is provided to furnish a change of air around the coils, the baking process will be retarded and may result in the varnish setting or hardening only on the surface of the coils.

Device for Testing Gage in Switches and on Curves

By J. S. Wilder,
Engineer of Maintenance of Way Municipal Railway of St. Petersburg, Fla.

The accompanying illustration shows a gage which we have been using for some time as a check on the installation of switches. The gage consists of a piece of galvanized iron pipe, carrying at one end a rod to which is attached a piece of iron plate cut to the contour of a wheel tread and flange, while on the other end are two similar plates riveted to a fork. When the fork end of the gage is held against the gage side of the rail or the bearing surface in the case of special trackwork, the gage is obviously normal to it at this point, and hence can be used in determining the gage of the track accurately at the location.

This gage was made because we noticed at times that wheel flanges were riding or bearing too close to mate or frog points. For instance, this year, while we were installing four

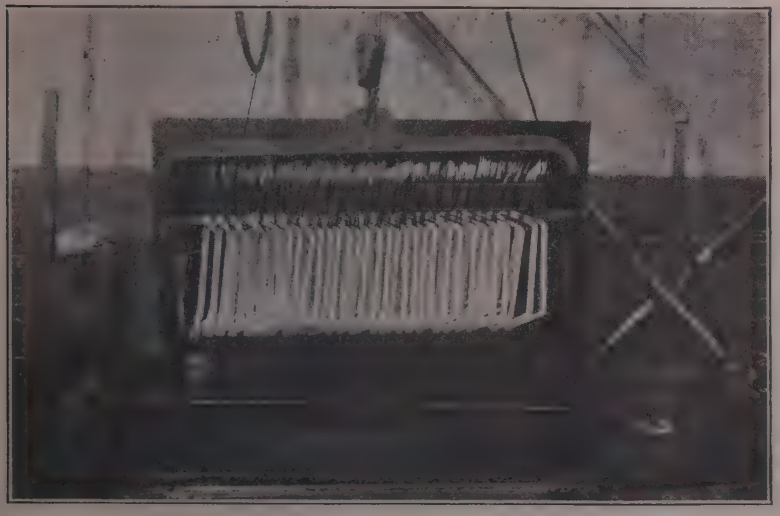


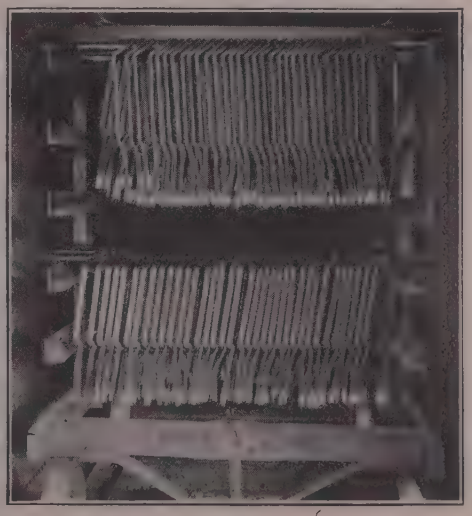
Forked Device for Determining Track Gage

new wye tracks, for which the pieces of special trackwork were made by one of the largest manufacturers, we found in several instances a slight variation in track gage. By means of our device we were able to get better clearance of wheel flanges at the mate points, either opening or closing the track gage slightly. On one wye track, the gage had to be closed nearly ¼ in. more than standard on the straight side, to secure a reasonably good gage through the curve. At the wye end, the gage had to be opened up a quarter inch throughout the entire switch piece.

We aim to allow the outer flange of a wheel when new just to touch, or nearly to touch, the edge of the head of the rail on double-guard curves, as experience has shown that this gives the best operation.

As a result of these adjustments the operation of cars over these





At Left, Coils Are Separated During Dipping and Baking. At Right, Coils Arranged in Oven So That Heat Will Reach All Parts

tracks has been entirely satisfactory, which it would not otherwise have been.

This year we had occasion to move a passing track from one location to another. We had been unable to operate cars to the left on this passing track on account of wheel flanges riding or straddling the mate point. We shortened one lead rail at each end, moving the mate piece ahead of the position originally intended, so that cars could go either to the right or left as necessary. Our gage device came in handy in determining the amount necessary to cut off the lead rail.

I do not know whether this device is original, but I have seen nothing of the kind on the market. While we do not claim it to be scientifically correct, it is a handy, practical check on trackwork.

A Method for Washing Waste

THE following method of washing waste used in motor bearings has been in use on a large Eastern railway system for a number of years with satisfactory results. A tank is used with a screen placed about 20 in. from the bottom. Oil heated to 170 deg. F. is poured over the waste placed on this screen. The hot oil carries the dirt and sediment from the waste and this settles in the bottom of the tank. The top oil from the bottom of the tank is used for the washing, and this can also be used in motor and journal bearings when it has been properly reclaimed.

Shop Lathe Used for Banding Armatures

A LATHE that was formerly used in the machine shop of the Los Angeles (Calif.) Railway has been converted into a satisfactory armature banding machine by J. L. Clark, superintendent of electrical repairs. The lathe has a 25-in. swing and a two-speed gear. It is operated by a 3-hp. motor.

The armature to be wound is lifted into place on the lathe by a pneumatic hoist, and then turned the same as metal or wood is turned on shop lathes. The wire for banding is carried on a spool behind the worker. It runs over a pulley which has weights attached to keep the wire taut.

A pedal for foot control has been

Attachments Added to Lathe for Banding Armatures

constructed of iron pipe. This is connected to the belt shifter by links and a bell-crank lever, so that the lathe can be stopped and started as desired by the operator and still leave his hands free for the banding.

Jacking Out Poles in Birmingham

A NOVEL plan has been used on the Birmingham (England) Corporation Tramways for lifting steel poles out of the ground without excavation. It was devised by the engineering firm of Hollings & Guest of Birmingham, and is described and illustrated in a recent issue of the *Tramway & Railway World*.

A split clamp with projecting flanges is bolted to the pole at a suitable height, and the pole is lifted by means of two hydraulic jacks placed one on each side. Pressure for the jacks is supplied by a hand pump. The travel of the jack plungers is, of course, small, so that it is necessary gradually to lower the split clamp on the pole as the latter rises from the ground.

This plan was used recently on a job where a large number of poles had to be removed in connection with a change in the method of transportation on one route.

New Equipment Available

Dustless Ash Conveyor for Power Plant

A TYPE of ash conveyor which is new in this country, although successfully used in Europe, is being marketed by the Combustion Engineering Corporation, New York, as the "Combusto" ash conveyor.

This conveyor consists of a double chain scraper or drag conveyor moving in a trough containing water, the trough being located under the ash discharge of the stoker. Ashes and clinker fall from the stoker, or through the clinker grinder, directly into this trough and are quenched and immediately carried along by the conveyor and deposited in a large storage hopper or car.

A feature of this conveyor is the water seal, as the chute which forms the ash discharge of the stoker extends below the water level in the trough. This prevents the formation of dust, and further the rapid quenching of the hot clinker breaks it into smaller pieces, thus facilitating removal by the conveyor. The use of a duplex conveyor, consisting of two water troughs, is recommended where there is no ash hopper under the stoker or where the capacity is limited so that in case of a shutdown of one conveyor for any reason, the other may be started immediately. Where there is already a basement and hoppers are of fair capacity, the single conveyor may be used, a suitable door being provided for emptying the hopper periodically into cars or trucks while repairs are made to the conveyor.

The trough may be either of cast-iron or concrete construction. If of the former the sides and bottom are made in sections 4 ft. long and $\frac{5}{8}$ in. thick.

The sheet-steel scrapers working in the trough are 18 x 4 x $\frac{1}{2}$ in. in dimensions, and they are attached, on 17-in. centers, to the driving chains. The driving sprockets, situated at the end of the incline which is usually provided so that ashes may be discharged into cars or a bunker or otherwise disposed of, are connected by means of reduction gears to the driving motor or engine so that the maximum speed of the conveyor will be about 14 ft. per minute. At this speed the power consumption is estimated at about $\frac{3}{4}$ hp. per 1,000 lb. of refuse per hour, depending upon the length of the trough, etc. The capacity of the conveyor under these conditions will be about $2\frac{1}{2}$ tons per hour.

The News of the Industry

Paving Case Decided

Franchise Requirement Compelling Company to Finance Repaving Between Tracks Held Reasonable

In an opinion handed down on April 17, 1922, of which printed copies have recently been received, the Public Service Commission of Pennsylvania expresses the opinion that the repairs to the tracks of the Reading Transit & Light Company in Pottstown, and the pavement between the rails and on each side thereof as set forth in the report of the engineering conference, are necessary for the public safety and convenience, and are just and reasonable for the respondent to make.

In consequence, the commission entered an order requiring the company within six months from the date of service of the order to do all work necessary to repave and repair the pavement in all streets in the complainant's borough occupied by the company as set forth and described in the report of the engineering conference in this case. All this work was to be done at the company's own cost and expense.

Ordinance Required Paving

In the franchise ordinances granted by the Borough of Pottstown to the company, it was provided that the respondent should pave and keep in repair so much of the street occupied by its track as was between the rails and 2 ft. on each side. The ordinances specified the character of the pavement to be laid. The streets were first occupied by the railway in 1906. The Borough of Pottstown complained that the company had not complied with the terms and conditions of the franchise ordinance alleging: that the condition of the street paving was extremely bad and that the company's attention had repeatedly been called to the existing condition of the paving and that the respondent had been requested to repair the same in compliance with the conditions prescribed in the ordinance. Further, it was charged that notwithstanding such notice and request the company had failed to make the necessary repairs and that the condition of that part of the streets occupied by the company had become an absolute menace to public travel.

The company acknowledged receiving request from the borough, but denied that the paving was in bad condition, and further averred that the duties sought to be imposed upon it by the complainant to repave the several streets as set forth in this complaint were unjust, unreasonable, unlawful and burdensome, and that the company was without the necessary funds to repave the street and maintain it. Furthermore, the railway contended that the franchise ordinances of its constituent companies were unjust, discriminatory, burdensome, and in violation of the Pennsylvania public service company law.

An engineering conference was agreed upon and personal inspection was made by the members of the paving complained of, and a full report relating thereto, duly signed by the three members of the conference including the engineer of the railway, was offered in evidence. In this report it was set forth in detail the work necessary to be done on the several streets in the complaining borough in which the respondent's tracks were laid.

Methods Not Prescribed by Commission

There was a disagreement in the conference, however, as to the kind or type of base which should be laid in the street before the paving was relaid. The commission said that the question of whether or not the repairs shown to be necessary in this case should be made as contended by the borough's engineer or in the manner suggested by the railway engineer was not for the commission to determine. It merely held that the work should be done in some substantial manner as the safety and convenience of the public demanded. The method to be employed was left for the respondent company to determine. In this connection the commission pointed out that as the pavement must hereafter be maintained, it behooved the railway to have the same laid in a substantial manner.

Relieved of Paving Costs in San Diego

At the primary election held on March 20 in San Diego, Calif., the amendment with respect to paving carried by a safe majority. This vote relieves the San Diego Electric Railway of the cost of new paving on streets now occupied by the company's tracks.

Following approval by the voters of this amendment to the city charter exempting street railways from paving between and alongside tracks on streets not now paved but which may hereafter be paved, the San Diego (Calif.) Electric Railway and the Bay Shore Railway have made application to the City Council to have the provision written into their general franchises. A similar amendment was defeated at a special election last fall, but the amendment approved by the voters at the recent primary election was more explicit and apparently suited the voters better, as they approved it along with eight other amendments, all of which were ratified by the California legislature, now in session.

New Transit Bill Appears

Substitute Home Rule Bill Introduced in New York Assembly by Republicans

The Republican counter-proposal to the Hylan-Smith plan for New York City control over transit and other public utilities was laid before the Assembly on April 10. It is in the form of a bill sponsored by Assemblyman George N. Jesse and provides for a city transportation commission appointed by the Mayor. According to the proponents of the Jesse measure, it offers a degree of home rule sufficient to meet the city's needs.

The measure contains definite provisions for:

1. A transportation commission of three members, named by the Mayor, but whose salaries and terms of office are to be fixed by the Board of Estimate.
2. The commission without the consent of any other body to lay out routes, build new subways and contract for their operation at a rate of fare to be agreed on by the city and the operating company.
3. The contracts which the city has made in regard to the present subways or other means of transit now existing being carried out without interference from the State.
4. The commission reducing but not increasing charges over those provided by statute, thus limiting its rate-making powers.
5. Assuring a universal 5-cent fare from any part of the city to any other part of the city.

The measure is said to be satisfactory to Republicans, who felt it would be politically unwise completely to turn down Mayor Hylan's demands for a voice in transit regulation, as at first proposed by some of their colleagues.

In a statement given out in connection with the introduction of the bill Assemblyman Jesse said:

> The predominant feature of the 1921 legislation amending the public service commission law was that the Public Service Commission and the Transit Commission could, if in their judgment necessity demanded, increase a rate, even though a lower rate had been fixed by law, by franchise or contract. The bill now introduced prohibits this by withdrawing power from the commissions. This applies not only to rates of fare on transit lines, but also for gas, electric, steam, telephone and telegraph service.
>
> The 1921 legislation also provided in respect to the plan of readjustment of transit companies that the Transit Commission was empowered to make that such plan could be put into effect over the possible objection of the local Board of Estimate and Apportionment. The pending bill provides explicitly that any such plan must receive the approval of such local board.
>
> The Transit Commission never used these broad powers but the fact that it had them furnished the occasion for all kinds of demagogic charges as to what the Transit Commission was going to do. There was wide-spread criticism of the 1921 legislation on the ground that these provisions violated the principles of home rule. The pending bill should abundantly satisfy the sincere advocates of home rule, because it more than restores the powers claimed to have been taken away in 1921.
>
> The pending bill gives the city full and complete power over rapid transit plans and contracts. The original rapid transit act was passed in 1891, and in 1894 was amended to provide for municipal construction. The original commissioners were named in the act and the rapid transit powers have always been exercised by State officials, in turn by the Rapid Transit

Board, the Public Service Commission for the first district, and Transit Construction Commissioner, and the Transit Commission. From time to time powers of approval were given to the Board of Estimate and Apportionment, but never powers of initiation and direction. Now it is proposed to take away all these powers from the State agency and turn them over without reservation to the city authorities.

Therefore, the bill not only restores such measures of home rule as existed in the local authorities prior to the legislation of 1921, but goes much further and makes the city authorities thoroughly independent in the planning and building of subways.

$500,000 for Improvements in Albany

The United Traction Company, Albany, N. Y., will spend nearly $500,000 this summer in Albany and the surrounding cities in an effort to improve its service in preparation for the commercial and building developments under way in the capital district.

Announcement of this improvement was made on April 7 by Ernest G. Murphy, superintendent, who outlined its chief features. The greatest construction in Albany will be from Lark to Quail Streets, on Madison Avenue, a distance of about 1 mile, where new trackage will be put down in connection with the new pavement which is to be laid this summer, while additional switching facilities will be built west of the Quail Street carhouse.

Construction of approximately 14,000 ft. of new tracks or improvements all told will follow the paving programs in the various municipalities served.

Most of the work will be done by contract. Bids will soon be opened for paving materials and rails, Mr. Murphy said.

A transfer table capable of moving a car from the storage line will be constructed opposite the Quail Street station.

New tracks will be laid for about 2,000 ft. in Rensselaer Street at the New York Central Railroad shops to facilitate handling of cars for employees who formerly were forced to wait the slow movement of cars over the single line from Central Avenue. The new line will provide switching room at each end of Central Avenue.

In addition several new automatic sectionalizing switches will be installed in various sections of the city with the view of relieving traffic congestion.

In Rensselaer, Troy, Watervliet, Green Island, Cohoes and Waterford traction line improvement will follow the intensive paving program to be put into operation there.

In Watervliet a new high-tension switching station will be constructed at a cost of approximately $100,000 to provide even distribution of energy among lines in that section and remove trouble now experienced. Under the present system high-tension current operating Troy and Watervliet lines is conveyed by means of large feeders to the Twenty-fifth Street station, in Watervliet, through Troy from the main plant at Albany.

If trouble develops in the Albany plant it automatically ties up traffic in the outlying towns. Under the new system the power, though coming from Albany by means of the new switching station, can be continued for car operation, despite trouble in Albany.

In addition to this station, feed lines will be constructed in Green Island to care for the growing traffic at the new Ford plant.

New Wage Agreement in Washington

A new agreement was executed on March 26 between the Capital Traction Company and its employees to remain in force until March 30, 1926. This agreement is identical with the agreement which has been in force for the past three years with the exception of the new wage scale for trainmen entering the service after March 30, 1923, given in Sec. 18 and Sec. 26 in reference to the wages and working conditions of the employees other than trainmen. Sec. 18 says:

The rate of wages for conductors and motormen and bus operators in the employ of the company on March 30, 1923, shall be as follows:

First three months' service, 51 cents an hour.

Next nine months' service, 54 cents an hour.

After twelve months' service, 56 cents an hour.

The rate of wages for conductors and motormen and bus operators employed after March 30, 1923, shall be as follows:

First year, 50 cents an hour.

Second year, 52 cents an hour.

Third year, 54 cents an hour.

Fourth year and thereafter, 56 cents an hour.

Motormen and conductors acting as instructors or as one-man car operators shall receive 5 cents an hour in addition to their regular rate of wages.

Sec. 26 says:

The wages and working conditions of shop, substation and other employees, except trainmen and bus operators, now in the company's employ shall remain as at present. Employees in the shop shall receive time and one-half for all overtime and Sunday time, and time and one-half for all holidays if compelled to work.

Platform Employees May Be Appointed Special Policemen

Senator Parton Swift and Assemblyman Nelson W. Cheney of Erie County have introduced a bill in the Legislature at Albany, N. Y., which would amend the railway law to extend to a surface railway operating within or between three or more cities the privilege of having its platform employees appointed special policemen under the jurisdiction of the New York state constabulary.

The law as it stands now allows any steam railway corporation to have any conductor or brakeman appointed a policeman with powers of arrest in cities and villages through which the railway passes.

The members of such a police force would be appointed by the traction company with the approval and authority of the head of the state police and would not be subject to the jurisdiction or dicipline of local municipal authorities of cities through which the railway operates. Compensation for all such special officers would be paid by the railway.

Pittsburgh Receivers Ask Men to Modify Demands

The receivers of the Pittsburgh (Pa.) Railways have sent their reply to their employees who recently presented demands for a wage increase and changes in working conditions. The motormen and conductors are asked to modify their demands or else refer the matter to arbitration according to a clause in the present agreement. The receivers seek a free hand in bringing about further economies in operation. Further it is their contention that a 10-cent fare would be insufficient to meet the proposed increase in the wage scale. The answer of the receivers in part follows:

It is our purpose to present, as relevant to the consideration of proper working conditions and wage rates, the following:

1. Payments now being made for time wherein no service is performed.
2. The desirability of allowing our operating officials to assign such men as they deem competent to the operation of cars other than passenger cars used on the system.
3. There has been a disposition on the part of your committee to attribute to the receivers a commitment to operate one-man cars only over such routes as may be agreed upon after consultation with your committee. In these days of high operating costs it is absolutely essential that the receivers shall feel free to put into operation such one-man cars as receivers may deem proper.
4. The elimination of present limitations on making and putting into effect of schedules and effecting changes when necessary.
5. The consideration of suggestions from officers of operating department relative to a more definite statement of some of the paragraphs of the agreement and the elimination of ambiguity therefrom.

The wage scale committee representing 3,000 motormen and conductors of the Pittsburgh (Pa.) Railways recently petitioned receivers Fagan, George and Tone for a wage scale of 80 cents an hour and an eight-hour day to replace the 60 cents an hour scale and the present day of eight and three-quarter hours. These changes were sought for the year beginning May 1.

The schedule asked for was as follows:

For the first three months of service, from 54 to 74 cents and hour; from 58 to 78 cents for the next nine months and from 60 cents to 80 cents an hour after the first year of service.

At the present rate of 60 cents the pay for the eight and three-quarter-hour day amounts to $5.25, and under the new rate and shortened day the daily pay would be $6.40. The increase amounts to 33⅓ per cent but under the shorter day the increase amounts to 22 per cent in daily pay.

Other changes were sought by the men, including time and a half for all overtime work beyond eight hours instead of time and a half for holidays as is the arrangement now.

The so-called 60 cents-an-hour rate now paid, which is the rate the majority receive, was fixed in 1921 and continued in 1922.

Previous to 1921, when the carmen accepted a 10 cents an hour reduction, the pay was: First three months, 64 cents an hour; next nine months, 68 cents an hour, and after the first year, 70 cents an hour, or 10 cents an hour less in all three groups than is now asked.

Detroit Car Men Seek Twenty per Cent Wage Increase

Following the adoption of a resolution embodying certain requests at a meeting of the platform men employed on the city cars in Detroit, an increase of 20 per cent in salary was asked in a communication presented to Ross Schram, assistant general manager of the Department of Street Railways, and the street railway commission. The men ask that the rate of pay be raised from $5 to $6 per day and that the overtime rate be changed from 75 cents to 90 cents per hour. They ask also that their working hours be kept within a thirteen-hour period.

While no action has been taken by the commission and no information has been given out by the city officials it is believed that the members of the street railway commission oppose the recognition of the street car men's union. An agreement between the city and the organization is asked by the employees. The men base their demand for higher wages on the claim that the present rate does not meet living costs.

The situation is being placed before Frank E. Doremus, Mayor-elect of Detroit, by the street railway commission to determine his stand on the subject of recognition of the union and the increase in pay for the platform men. The new Mayor took up the duties of his office on April 9. It is contended that the union cannot be recognized by the city under the terms of the city charter.

The question arises as to how the increase in wages can be met and whether or not an increase in fares will be necessary if the demands of the men are met. According to the city charter, the operating costs must be met by the income from fares and a sufficient rate must be charged to pay these costs. As pointed out by the city comptroller some time before the last election when the ratification of the $5,000,000 bond issue for extensions to the street railway lines and for the purchase of new cars resulted, if the extensions were to be met out of the income from fares, a 6-cent or higher fare would be necessary.

Some time before the request for an increase for the platform employees of the municipal lines, platform men employed on the Detroit United Railway's interurban lines took similar action in asking for a 20 per cent increase.

Dayton Property Praised

A recent issue of the *Daily Court Reporter*, the only business newspaper published in Dayton, Ohio, calls attention to the work being done by the City Railway and emphasizes what an important factor the railway has been in the development of the city. The splendid relationship existing between the employees and the management is also made a subject of praise. The article urges the co-operation of the people of Dayton in order that the company can continue on a sound stable financial basis. It states that expansion can come only through steadily increasing sums of money and nobody will invest his money unless there is reasonable assurance of the safety of the principal together with a satisfactory return. Further, money will not be attracted for investment in the City Railway unless operations show a satisfactory margin of profit.

Fort Worth Road Will Spend $500,000

The Northern Texas Traction Company, Fort Worth, Tex., announces that negotiations have been completed whereby this company will take over and operate the independent road operated by the Southwestern Baptist Seminary Line. The Seminary line was built at a cost of $34,000, according to officials of the school, and it has been operated in connection with the school plant since its construction. There is an indebtedness of $1,500 against it, the note being held by the Northern Texas Traction Company.

The offer of the Seminary was that it would relinquish its right-of-way and all physical property to the Northern Texas Traction Company in consideration of the cancellation of the $1,500 note and the entering of an agreement that the Northern Texas Traction Company would operate the Seminary line under the regular 7-cent fare as a part of the Fort Worth system.

In agreeing to take over and operate the Seminary line, the Northern Texas Traction Company has also filed notice with the City Commission that it will soon begin work on extensions on the Riverside and Sycamore Heights lines. The question of extensions has been a point at issue in the controversy between the company and the city. The two extensions will represent a cost of more than $500,000, according to George H. Clifford, vice-president and general manager of the company. Money for making the extensions is being raised by the sale of 7 per cent preferred cumulative stock of the company to employees and patrons and an intensive campaign to advertise the sale of this stock has just been started.

Wisconsin Companies Are Expanding

A large number of cities and towns in Wisconsin will benefit by the 1923 expansion program and improvement plans already prepared and estimated by the electric light and power and railway companies operating in their communities, according to returns made in a questionnaire sent to them by the Wisconsin Public Utilities Bureau. The grand total runs into millions of dollars.

The Wisconsin Public Service Corporation, Milwaukee, which is furnishing electric light and power and operates the electric railway services in Green Bay, Oshkosh, Manitowoc, Chilton, Sheboygan, Algoma, Kewanee, Sturgeon Bay and other cities and towns in the Peninsular territory, has under consideration the expenditure of the following sums of money for improvements and additions to its system located in the foregoing cities: Substation equipment $100,000; extension of local rural lines and transmission lines $310,000; power house and outside equipment improvements $55,000; general reconstruction work $100,000. The Menominee (Mich.) & Marinette (Wis.) Light & Traction Company (a subsidiary of the Wisconsin Public Service Corporation) has a program for 1923 that calls for improvements to its electric distribution system amounting to $45,000.

The Wisconsin Traction, Light, Heat & Power Company, Appleton, has a 1923 building plan calling for an expenditure of $200,000 for new and replacement equipment to its electric light and power and railway systems.

The 1923 Wisconsin building program outlined by the L. E. Myers Company for its Wisconsin subsidiary, the Lake Superior District Power Company with headquarters at Ashland, operating in the northern parts of Wisconsin and Michigan indicates that this company intends to expand and enlarge its operations and hold its own as one of the largest operating companies in the State. Improvement plans already prepared call for an expenditure of $700,000 on steam and hydro-electric plant equipment and line improvements. L. N. Boisen, Chicago, is vice-president in charge of operations.

News Notes

Ford May Assist Railway Construction.—It is forecasted that Henry Ford will give financial assistance to the cities of Dearbon, River Rouge and Springwells in the construction of electric railway lines which will be coupled up with extensions to be made to the Detroit Municipal Railway. The increase in the number of employees at the Ford plants is so great that something must be done to provide adequate service for the additional workmen.

Agreement Renewed.—Following a series of conferences, the working agreement of the Trenton & Mercer County Traction Corporation, Trenton, N. J., and Division No. 540, carmen's union, has been adopted for another year with only three slight amendments. Hereafter the men who complete a steady run will receive time and a quarter for operating a tripper. Mail coats will be furnished to the men operating mail cars on the suburban divisions of the company.

Planning Celebration. — Citizens of East San Diego, co-operating with the city trustees, are preparing a carnival April 18 to 23 in celebration of the completion of the reconstruction work of the San Diego (Calif.) Electric Railway on its East San Diego line. This is now the finest street car line in San Diego, and on it on April 3 the company started a peak-hour express service designed to give patrons speedy access to the downtown business district.

Financial and Corporate

Common Dividend Earned Twice

Public Service Corporation Shows Increase in Gross and Net—Railway Revenues Improving

The fourteenth annual report of the Public Service Corporation of New Jersey for the year ended Dec. 31, 1922, shows gross operating revenue of the subsidiary companies amounting to $78,356,963, which is an increase of $3,045,455 over the previous year. The net income after taxes and interest charges was $5,570,239, which was an increase of $1,975,611 over 1921. Payments of preferred dividends amounting to $1,316,839 and common dividends of $1,950,000 were made, the latter totaling 6½ per cent for the year.

The report states that the customer ownership plan of selling the corporation's 8 per cent cumulative preferred stock proved so successful in attracting customers of the operating companies to become investors that it was continued last year with more than satisfactory results. Securities of the Public Service Corporation and its underlying companies are now held by upward of 60,000 individual owners.

Regarding the operations of the railway company, President Thomas N. McCarter, says:

With gross operating revenues showing an increase and gross operating revenue deductions a decrease, the railway company came through the year 1922 in much better condition, both physically and financially, than had been the case for several years preceding. This notwithstanding the fact that the 2-cent transfer charge fixed by the Board of Public Utility Commissioners, and subsequently set aside by the United States District Court, had diverted traffic in 1921 which was not regained last year. A marked business depression which had continued over from the previous year also made its effect felt, but since May, 1922, there has been a gradual improvement noted in general conditions, as is shown by the increasing numbers of employees in various factories served by the railway lines. The railroad and coal strikes adversely affected industries for a time, with a resultant effect on railway revenue, and an unusually large number of rainy Saturdays and Sundays last summer undoubtedly militated against the railway's receipts attaining a higher level. As it was, the ratio of operating revenue deductions to operating revenue was 78.5 per cent, as against 80.8 per cent in 1921, and the gross income of Public Service Railway, railroad and affiliated companies, after making operating and non-operating revenue deductors, increased $633,209.

Speaking of the jitney situation, Mr. McCarter says that the competition to which the railways have been subjected from jitneys whose operators are permitted to parallel railway lines on the same streets was not diminished during the year, but, on the contrary, it was increased because the jitneurs were allowed to substitute vehicles of much greater carrying capacity than those formerly in use. He states, however, that no additional permits for this class of jitneys were sanctioned by the Board of Public Utility Commissioners during the last year. Nevertheless, this situation is creating a very serious condition of congestion in the main arteries of the larger cities, which, in turn, is causing serious inconvenience to shops, banks and places of business along these thoroughfares, and, if allowed to continue indefinitely, is bound to have a deleterious effect upon real estate values.

It is stated that the transportation department experienced some difficulty in keeping its force of trained men up to the required number.

Expenditures for all purposes by the claim department amounted to $1,016,917, a reduction of $147.007 from the previous year. This represents a saving of 12.63 per cent and brings the percentage of total expenditures to gross passenger receipts to the low figure of 4 per cent.

Details of operating results of the Public Service Railway and its affiliated companies are given in the accompanying table.

PUBLIC SERVICE RAILWAY AND AFFILIATED COMPANIES
Income account for the twelve months ended Dec. 31, 1922

	Public Service Railway Company	Public Service Railroad Company	Other Affiliated Companies	Total
Operating revenues	$26,165,656	$298,419	$1,080,435	$27,544,510
Operating expenses and taxes	19,429,065	241,027	741,643	20,411,735
Amortization charges	1,102,079	.....	107,500	1,209,579
Operating revenue deductions	20,531,144	241,027	849,143	21,621,314
Operating income	5,634,511	57,392	231,292	5,923,195
Non-operating income (exclusive of dividends of affiliated companies)	101,510	632	25,045	127,187
Gross income	5,736,021	58,024	256,337	6,050,382
Income deductions (bond interest, rentals and miscellaneous interest charges)	5,316,194	108,999	49,409	5,474,602
Net income or loss	419,827	*50,975	206,928	575,780
Profit and loss accounts (excluding dividends)	19,906	†200	6,498	26,204
Surplus—before dividends	399,921	*50,775	200,430	549,576
Dividends (all to P. S. Corporation except directors' dividends)	†124,734	.....	124,800	66
Net increase or decrease in surplus	$524,655	*$50,775	$75,630	$549,510

* Deficit. † Credit.

Readjustment Explained

Report of American Railways Shows Net Income of $1,134,520—Conditions of New Financing Explained

The American Railways, Philadelphia, Pa., now known as the American Electric Power Company, reports a net income of $1,134,520 for the fiscal year ended Dec. 31, 1922. As there was a surplus at the beginning of the year of $1,522,192, the total surplus is $2 656,713, from which was deducted $1,086,879, consisting of transfers of dividends accrued on the preferred capital stock to the open account and sundry adjustments. With these charges taken care of, the balance of the surplus at the close of the year was $1,569,833.

Van Horn Ely, president of the company, in the report presented to the stockholders as of Feb. 16, 1923, reviews the work of the directors in planning for financing of some of the subsidiary companies, so that the American Railways might be reimbursed for funds advanced these companies during the period of the war and subsequent thereto, also to place the subsidiary companies in a position so that additional securities in the form of bonds or preferred stock could be issued from time to time, to care for extensions and settlements of the property.

NAME CHANGED FOLLOWING REORGANIZATION

The reorganization and change of name of the company have been referred to previously in the ELECTRIC RAILWAY JOURNAL. Mr. Ely says that the work of the directors resulted in arrangements being perfected with a strong group of bankers which had purchased a bond issue of $7,000,000 and $1,500,000 of 7 per cent preferred stock and the Consolidated Power & Light Company, Huntington, W. Va., and that these same interests cared for the maturing obligation of $2,305,000 of Wilmington & Chester Traction Company bonds, due April 1, 1923.

He also explained that arrangements had been made for funding the accumulated dividends on the preferred stock to the extent of 19¼ per cent to Feb. 15, 1923; for retiring $6,000,000 of collateral trust bonds and $3,000,000 of three-year 7½ per cent notes, retiring and canceling $1,100,000 of the $3,500,000 of five-year 8 per cent notes, and for increasing the authorized first preferred stock from $4,000,000 to $8,000,000 and retiring and canceling the $4,000,000 of second preferred stock.

Mr. Ely says that the board of directors decided that the property of the Bridgeton & Millville Traction Company could not be operated profitably and arranged to retire the bond issue of $500,000, surrender the charter, abandon operation, take up the tracks and liquidate the company. He explains that this was accomplished for the entire line except for the track between Bridgeton and Millville, which was sold to local interests.

He says that during the year the

COMBINED INCOME STATEMENT OF THE SUBSIDIARY AND AFFILIATED COMPANIES OF THE AMERICAN RAILWAYS COMPANY

For the Year Ended Dec. 31, 1922

Operating revenues		$19,342,697
Operating expenses, including depreciation reserves		13,302,912
Net revenue		$6,039,785
Taxes		973,788
Operating income		$5,065,997
Non-operating income		92,512
Gross income		$5,158,509
Interest, deductions, rentals, amortization of discount on funded debt and other charges	$2,663,643	
Sinking fund deductions	68,613	
Total deductions		2,732,256
Income for year		$2,426,253
Less income available for other stockholders		1,365
Income available for the American Railways Company, including interest on bonds, advances, etc		$2,424,887

REPORT OF TREASURER OF AMERICAN RAILWAYS COMPANY

For the Fiscal Year Ended Dec. 31, 1922

Income		
Income from subsidiary companies	$2,410,309	
Miscellaneous income	65,588	
Gross income		$2,475,897
Deductions from Income		
Interest accrued on funded debt	$930,318	
Interest accrued on floating debt	15,279	
Amortization of debt discount and expenses	91,799	
General administrative expenses	249,286	
Depreciation of office furniture and engineering instruments	2,175	
Taxes accrued	40,000	
Discount on securities sold during the year	3,354	
Premium retirement three-year 7½% notes	9,166	
Total deductions		1,341,377
Net income		$1,134,520
Surplus at the beginning of the year		1,522,193
		$2,656,713
Transfer of dividends accrued on preferred capital stock to open account	$735,000	
Sundry adjustments, mainly cost of the abandonment of the Bridgeton & Millville Traction Co., Bridgeton, N. J.	351,879	1,086,879
Balance in surplus at the close of the year		$1,569,834
Preferred stock dividends:		
Accrued in 1920—4.375 per cent	$175,000	
Accrued in 1921—7.0 per cent	280,000	
Accrued in 1922—7.0 per cent	280,000	
Per cent 18.375	$735,000	

maturing three-year $3,000,000 7 per cent note issue was extended for three years at 7½ per cent, and the American Railways Company-National Gas Company collateral trust bonds amounting to $962,000 were extended for a period of five years.

He further explained that the valuations of the properties of the various subsidiaries were progressing under A. L. Drum & Company, and during the year the Public Service Commission of Pennsylvania fixed fair values for the physical properties of the Scranton Railways, Altoona & Logan Valley Electric Railway, the Southern Pennsylvania Traction Company, operating in and about Chester, Pa., and the Chester County Light & Power Company, Chester, Pa.

Interstate Earnings Up

Net Increased $195,928, or 25.51 per Cent in 1922—Freight Traffic Almost Doubled

The gross operating income of the Interstate Public Service Company, Indianapolis, Ind., operating more than 90 miles of electric railway and doing a general light and power business is greater for the year ended Dec. 31, 1922, by $320,257 than the income for the year 1921. This is an increase of 8.09 per cent. Miscellaneous income of the company increased $83,000, or 128.64 per cent. The net earnings show an increase of $195,928, or 25.51 per cent. These facts are all contained in the report of the company for the year, presented to the stockholders at the recent annual meeting.

Harry Reid, president of the company, explained that in 1922 the number of customers served by the company was increased by 4,492. The connected lighting load increased 11.8 per cent and the power load was 10.2 per cent greater at Dec. 31, 1922, than at the close of the year of 1921. Mr. Reid said that the gain in volume of business in the railway department was in some respects even more noteworthy in figures of percentage. The freight tonnage on the interurban railway increased 83 per cent.

Mr. Reid further explained that the company arranged near the close of the year, with the approval of the Public Service Commission of Indiana, to acquire as of Jan. 1, 1923, all property and business of the Indianapolis & Louisville Traction Railway, the Southern Indiana Power Company, the Hydro-Electric Light & Power Company, the Hawkes Electric Company, the Winona Electric Light & Water Company, the Middlebury Electric Company and the Electric Transmission Company of Northern Illinois. The Indianapolis & Louisville Traction Railway owns the interurban line from Seymour south to Sellersburg, a distance of 41 miles.

He also explained briefly for the benefit of the stockholders the extent of the territory served by the other companies which were taken over. As these properties were not taken over by the company until Jan. 1, 1923, the financial results of the merger are not reflected in the report which was presented to the stockholders.

The company issued and sold in 1922 $721,000 in face amount of its prior lien stock and $372,000, par value, of its preferred stock, also $302,000 in principal amount of its first and refunding mortgage 5 per cent gold bonds. The proceeds of these sales were used for the company's corporate purposes. During the year prior lien bonds in principal amount of $123,500 were retired. Mr. Reid explains that the policy of offering the company's prior lien stock to customers, inviting them to become part owners of the company, has resulted in a wider personal interest in its affairs. The company's stockholders increased in number during the fiscal period from 1,009 to 1,980.

STATEMENT OF EARNINGS OF THE INTERSTATE PUBLIC SERVICE COMPANY FOR YEAR ENDED DEC. 31, 1922

Gross earnings, including merchandise sales		$4,276,664
Operating expenses (including taxes)		3,305,826
		$970,838
Miscellaneous income		148,082
		$1,118,920
Rental of leased railway property		155,100
Net earnings		$963,820
Interest on funded debt		478,738
		$485,082
General interest and amortization of bond discount		82,238
Available for dividends		$402,844
Dividends paid and accrued:		
Prior lien stock dividend		65,833
		$337,011
Preferred stock dividend		283,020
Balance carried to surplus		$53,991

The report is particularly interesting in that it contains an appendix of seven pages giving general information about the company and illustrating some of its properties. There is also a map showing the territory served.

Segregation Plan Explained

At the recent annual meeting of the Quebec Railway, Light, Heat & Power Company, Quebec, Canada, protests were lodged against what was termed the segregation of the gas, tramways and power services of the company. In reply E. A. Robert, president, denied that the recent reorganization of the company constituted segregation of the services and said that only one stock issue, that of the holding company, would be listed for trading on the exchange.

In answer to the inquiry of a shareholder, he also said that at present the company was not prepared to make payments on the $3,307,200 issue of income bonds.

The board of directors was re-elected with the addition of J. P. B. Casgrain to replace George E. Amyot, resigned.

Mr. Robert said that he had not been prepared to give a lengthy outline of the plans at the meeting he was addressing.

When he took his position on the board, Mr. Robert said he found that all future bond issues would have had to have the status of second mortgages, which means that they could be marketed only at prohibitive rates. More rolling stock was needed to meet the demands of the city for better service, but there were no funds for this purpose. Even bond interest had to be met by bank loans. It was lack of working capital that caused the reorganization.

Mr. Robert said that the plan was to separate the companies in order to allow earnings from gas, electricity and tramways to be differentiated so that it would be possible to give the city authoritative figures in fixing the rate of return guaranteed by the city. The stock of the operating companies would be held in the treasury of the holding company, the securities of which could in turn be dealt in on the public exchanges.

$835,731 Surplus for Hudson & Manhattan Railroad

The report of Hudson & Manhattan Railway, operating under the Hudson River between New York and New Jersey for the year ended Dec. 31, 1922, shows a surplus of $835,731 after taxes and bond interest, including 5 per cent on adjustment income bonds. Allowing for 1 per cent accumulated interest unpaid at the end of the year on the adjustment bonds and for 5 per cent dividend requirements on the preferred stock, the balance was equivalent to 60 cents a share earned on $39,994,890 outstanding common stock. In the previous year the surplus was $331,824 after taxes and all interest charges. The income account for 1922 compares as follows:

	1922	1921
Oper. revenue	$7,862,419	$7,683,662
Expenses and taxes	4,494,372	4,545,084
Operating income	$3,368,047	$3,138,578
Other income	1,291,356	1,029,192
Non-operating income	264,154	245,715
Total income	$4,923,557	$4,413,485
*Bond interest, etc.	2,432,726	2,426,561
Reserve for contingencies	.....	.....
Balance	$2,490,831	$1,986,924
Adj. inc. bond inter.	1,655,100	1,655,100
Surplus	$835,731	$331,824

* Exclusive of interest on adjustment income bonds

Tri-City Railway Wants to Abandon Short Parallel Lines

Abandonment of nearly 3 miles of line in the cities of Rock Island and Moline, Ill., has been asked by the Tri-City Railway of the Illinois Commerce Commission.

The principal abandonment for which permission is sought is that of the Third Avenue line in Moline, where the relocation of the business district has brought about a condition that has resulted in the Third Avenue line running parallel to the Fourth Avenue line and forming, as the traction line holds, a dead appendage.

A like condition exists in Rock Island. There the company proposes to abandon the Fifth Avenue line between Forty-third and Forty-sixth Streets and the Seventeenth Street tracks between Second and Seventh Avenues.

Detroit's Plans for Bond Proceeds

At the last Detroit election the Board of Street Railway Commissioners by popular vote was authorized to issue $5,000,000 to extend the system, but under the present limitation of 2 per cent of the assessed valuation which a city in Michigan can spend for public utilities not all of this money is at present available. With the new property assessment it is expected that a greater part of this sum can be spent before long.

It is expected that the first $1,400,000 will be used to complete the payment of $2,400 000 for the 200 Peter Witt cars ordered last August by the Municipal Railway. No definite plans have been made for further expenditure, but some will undoubtedly go for track extensions. Some 40 miles have been projected in the building program, and probably hearings will be held when the funds become available to determine which of these track extensions is the most important.

City Administration Seeks to Delay B.R.T. Reorganization

The city administration of New York, through Corporation Counsel George P. Nicholson, objected to the proposed Brooklyn Rapid Transit reorganization at the hearing held on April 10 by the Transit Commission. He said the plan should await action by the Legislature on the transit bills, and expressed the belief that the present Transit Commission probably would be abolished.

George McAneny, chairman of the commission, said the commission was not disposed to take into consideration in making its decisions the present condition of current politics. The hearing was adjourned until April 20, after Mr. Nicholson and his assistants had protested against the plan generally and specifically.

Mr. McAneny said in part:

> Mr. Nicholson, the commission is not disposed to take into account the condition of current politics in determining its calendars or its course of action here. This is a matter of very large public moment, and will go through lengthy discussion, from time to time, on its several phases. The commission will continue to function, as the law requires it to function, to act upon matters that come before it as rapidly as it may act after they are presented. Therefore it must deny your request for an adjournment.
>
> I might add, as to the public importance of this matter, that these reorganizations, designed to put these great properties upon their feet, to permit them to go ahead with the resumption of uninterrupted service and the expansion of their facilities, should, in my judgment and the judgment of the commission, never be delayed.
>
> The proposed reorganization of the B. R. T. properties will take them out of receiverships and will put the B. R. T. companies, we assume, in a position similar to that in which the Interborough Company has found itself since its reorganization.

Authority Sought to Issue Securities Under Maine Reorganization

A hearing was held recently before the Public Utilities Commission of Maine on petition of the York Utilities Company for authority to issue stocks and bonds as the successor company to the Atlantic Shore Line Railway. Foreclosure and sale, by decree of the United States District Court, enabled the committee, representing the bondholders, to reorganize and try to place the property on a sound basis. The new corporation seeks authority to create $2,393,500 of capital stock, and to issue $482.300 in common and $179,100 in preferred at this time. This petition seeks the right to acquire rights, privileges, properties and franchises of the system. It is proposed to finance the project as follows:

To issue to the Alfred Light & Power Company $50,000 in preferred stock, $75,000 in common, $75,000 in first mortgage 5 per cent bonds and $50,000 in second mortgage 5 per cent bonds.

To issue to the Sanford & Cape Porpoise Railway $10,000 in common stock, $81,000 in first mortgage 5 per cent bonds and $54,000 in second mortgage bonds.

To issue to the holders of first mortgage bonds of the Atlantic Shore Line Railway $36,000 in preferred stock, a like amount of common, $24,000 in first mortgage 5 per cent bonds and a like amount in second mortgage 5 per cent bonds.

To issue to holders of the consolidated mortgage bonds of the Atlantic $289,200 first mortgage 5 per cent bonds, and $216,900 in second mortgage 5 per cent bonds, $93,100 in preferred stock and $39,900 in common stock.

Auction Sales in New York.—At the public auction rooms in New York there were no sales of electric railway securities this week.

Operations to Cease.—According to a recent decision of Judge Peters in the United States District Court the receiver of the Portsmouth, Dover & York Street Railway, Dover, N. H., has been authorized to discontinue further operation of the property.

Net Increases.—The net balance of the Lehigh Valley Transit Company, Allentown, Pa., increased $25,812 in 1922 after all charges. The gain was remarkable in view of a decrease of $177,517 in the combined gross business. During the year 66,996,655 passengers were carried. The report shows that tne property of the Easton Transit Company, a subsidiary, had been leased during the year.

Park to Be Sold to Satisfy Judgment.—Notice of sale of a portion of the assets of the Southwestern (Tex.) Traction Company, which operates an interurban line between Temple and Belton, Tex., a distance of 10 miles, has been posted at Temple. The property to be sold consists of a tract of 37.64 acres of land midway between Temple and Belton now used as a pleasure park. The sale is to be made to satisfy a judgment of $6,000.

Surplus Earnings Increase $350,000.—The gross earnings of the United Light & Railways Company, Grand Rapids, Mich., for the twelve months ended Feb. 28, 1923, are $12,029,087 against $11,235,195 for the same period ended February, 1922. The surplus earnings available for depreciation, debt discount and common stock dividends amounted to $1,215,476 compared with $857,994 for the twelve months ended Feb. 28, 1922.

Interurban Elects New Director.—At the annual meeting of the stockholders of the Washington, Baltimore & Annapolis Electric Railroad, Washington, D. C., C. M. Mason, New York, was elected a director to fill the vacancy caused by the death of James A. Hemenway. Other directors and former officers were re-elected. The company reports for the year ended Dec. 31, 1922, gross earnings of $2,433,066, as compared with $2,512,540 the previous year. The income after providing for taxes and charges was $230,152, against $230,531 in 1921.

Traffic and Transportation

Service Order Issued

Schenectady Railway Directed by Public Service Commission to Carry Out Service Changes

Orders have been issued by the Public Service Commission directing improvement of the Schenectady (N. Y.) Railway's equipment and service, and calling for eighteen new cars and an investigation into the practicability of establishing supplementary bus service in Schenectady. The orders make mandatory suggestions made more than a month ago.

The commission directed that six new interurban cars be obtained for use between Schenectady, Albany, Troy and Saratoga, and twelve new double-truck cars for Schenectady. The new cars must be in operation by Sept. 1.

The company, however, has anticipated the order by announcing it would order twelve cars for Schenectady, and establish supplementary bus line service for sections not served adequately by the company's trolley lines.

In addition to requiring eighteen new cars, the commission directed the company to obtain at least one double-truck snow plow and one ice chopping machine.

Three other important orders were issued by the commission, with the requirement that the company reply within a month whether it will carry them out. These are that either a new substation be constructed at the McClelland Street carhouse or at State and Elbert Streets with adequate transformer apparatus, or that an increase be made in the size of the units at the Dock Street station; that during the morning and evening rush hours all interurban cars going to and from the General Electric Company's plant be routed via Broadway and Edison Street; and that during the morning rush hours most of the State Street and Mount Pleasant cars be operated inbound via Veeder Avenue, Smith Street, Broadway, Edison Avenue and River Road, reversing the operation during the evening rush hours.

The company also is directed to comply "forthwith" with fifteen recommendations for improvement in operating and general service conditions as follows:

That car overhaul be made on a proper time or mileage basis.

That an effort be made to secure a standardization of equipment.

That the operation of cars with flat wheels for more than one round trip, except in extreme cases of emergency, be strictly prohibited.

That the force employed in car cleaning be increased, and the methods employed be improved.

That a system of double berth operation be installed in the business district.

That passenger stops within the city of Schenectady be reduced to the smallest number consistent with convenience of riders generally and with the greatest benefit to the transportation system as a whole, such reduction to be submitted to the commission for approval.

That no cars be turned back before reaching signed destination, except in cases now provided by its rules.

That the changing of car signs before reaching destination be strictly prohibited, except in cases provided for by rule.

That methods be employed to eliminate the practice of crews of operators running by passengers waiting for car, except in cases now provided for by rule.

That all cars not disabled, returning to car house and carrying sign "car house" carry passengers while doing so, passengers on board to be notified of the destination of the car.

Buses for Schenectady

The Schenectady (N. Y.) Railway is to operate passenger carrying automobile buses, according to an announcement made on April 7 by James F. Hamilton, president of the company. The buses will be used in districts which are not now sufficiently served by trolley cars.

The number of buses to be purchased and the routes to be followed are details which Mr. Hamilton would not disclose at this time. However, it is probable a bus line will be operated between the General Electric plant and the Mount Pleasant section. This route was suggested by the Public Service Commission in connection with its report of a survey of conditions in Schenectady.

It is probable buses will also be operated in Erie Boulevard. Deliveries of buses for use in Schenectady will probably not be made for sixty days, Mr. Hamilton stated.

Another Weekly Pass on Trial

The Seattle & Rainier Valley Railway of Seattle, Wash., has placed in effect the weekly pass system, permitting a passenger to ride any number of times during a week for $1.25, with the pass interchangeable. Walter M. Brown, general manager of the company, states that a very careful analysis of the average amount of service obtainable to each passholder will be made, and if it develops later that it is possible to reduce the purchase price of the pass, the company plans to do so. He stated that the company did not expect to increase its earnings, but that it did expect to increase its service to the line's patrons. Mr. Brown states that an average of 22.7 rides a week is given as the probable result, which would mean 5½-cents transportation. In Tacoma, the average number of rides is twenty-six a week, his figures show.

In the meantime, the State Department of Public Works has conducted a hearing on the application of forty-seven residents of the Rainier Valley district for a 5-cent fare on the company's lines. The company's chief defense was that the average haul on its lines is 6 miles, against 3.7 miles on the Seattle municipal lines, and that a reduction in fare from 8⅓ cents is not possible.

Railways Answer Board

Los Angeles Lines Offer Plans for Improvements Costing $6,000,000 to Better Service

The managements of the two railway systems at Los Angeles, Cal., on April 5 filed an answer to the report of the Board of Public Utilities of the city on the transportation problem of the city. The companies agree to make extensive improvements, involving the extension of six lines, and also to construct four new lines and give temporary bus service on twelve other lines. Delay is, however, requested on nine, while the companies refuse to make the changes suggested by the board on eight lines.

The estimated cost of the improvements that the rail lines agree to carry out is $6,000,000. The companies urge that the two important questions of universal transfers and extension of the Los Angeles Railway lines into the territory in Hollywood now exclusively served by the Pacific Electric Lines be delayed until it is decided whether the two lines are to be unified. This question is now being made a matter of study by Richard Sachse, former chief engineer of the California State Railroad Commission.

The board's report, referred to at length elsewhere in this issue, included forty-one suggested improvements. In some cases where the board recommended motor bus "feeder" lines be installed, the railway systems refused to accept the board's report, claiming that the business to be had did not warrant such bus lines, and in other cases certain unimproved streets made bus service impossible.

The railway managements state that in their judgment there will not be any reasons for an increase in fares in Los Angeles unless buses are awarded franchises to run on streets parallel to existing railway lines.

The railways recommend that the City Council appropriate $3,000 to send the chief engineer of the Board of Public Utilities and a member of the board to Eastern cities to study motor-bus and electric railway conditions.

Two of the commissioners on the board who form a majority have refused to accept the railway companies' plans. They take the stand that the railways refuse immediately to meet the demand of the commission on the points set forth in the board's report and recommendations.

Commissioner Bogardus claims the railways have refused to accept the full program demanded by the board, and that other means must be found to obtain the transportation needed. This may contemplate bringing in the bus.

In regard to the proposed subway system whereby it was proposed to use Pershing Square, the city's central park, as an underground subway passenger terminal, the city attorney states that the present city charter gives the City Council power to authorize railway lines to build subways under

city property, but does not permit them to authorize the construction of underground passenger stations; therefore, the Pacific Electric's new $20,500,000 subway system, must be authorized by an amendment to the city charter. In consequence the necessary amendment may be placed upon the ballot at the May 1 primaries or the June 5 city election.

The People's Motor Bus Company is conducting a very active campaign in behalf of two petitions certified and placed on the ballot for May 1 election. One of these repeals the existing "jitney" bus ordinance. This measure prohibits bus operation in the congested downtown district. The other petition would compel the City Council to give a franchise to the motorbus company to operate a motorbus system on 61 miles of streets, some of the routes paralleling the railway lines.

Some of the members of the City Council contend the rail lines should have an opportunity to work out their program, but the City Council has not as yet taken any action on the board's report.

The City Council does not plan to take any action on the motorbus question until after the election of May 1, when the voters will express themselves on the subject.

More Attractive Service Proposed for Elevated

By direction of the new board of directors, Frank Hedley, president of the Interborough Rapid Transit Company, New York, has been considering, in conference with the Transit Commission, ways and means to improve and make more attractive the service to the public furnished by the elevated lines. A careful survey has indicated that a substantial number of people would be glad to take advantage of the greater comfort and the open air riding on the elevated roads, especially on express trains, if the elevated express service were made an all-day instead of a "part time" service during rush hours only.

The board at its meeting on April 10 therefore authorized changes in the train operations which, it is believed, should lead to a greater use of the elevated lines by the public, thereby relieving congestion elsewhere pending the opening of new subways.

The new schedules will call for an increase of 428 trains a day, and the major part of this will become effective on Monday, April 16.

Not only will the number of trains be greatly increased, but the intervals of time between trains will be greatly reduced. The time-tables are in course of preparation and the resultant lessening of the intervals will be announced later.

These changes will involve the expenditure of more than $2,000,000. While the added service will greatly increase the daily operating expenses, it is hoped that the public will help the company in its efforts to give better service and justify these expenditures by traveling to a greater extent upon the elevated lines in the open air and sunlight.

Electrification Rumors Plentiful

Several Texas Roads Reported to Be Contemplating Adoption of Electricity as Motive Power

Electrification of the St. Louis Southwestern (Cotton Belt) between Dallas and Greenville, Tex., is being discussed. Willingness of the railroad to undertake electrification was expressed by Daniel Upthegrove, president of the Cotton Belt. He indicated that the Cotton Belt might undertake the work of electrifying its line, or that a proposition might be considered under which some private company would undertake to electrify the line and operate it.

The distance between Dallas and Greenville is slightly more than 50 miles, and it is declared that the line can be electrified and used for passenger and light freight and express traffic, while steam trains use the line for hauling heavy freight.

C. W. Hobson, Dallas, Southwestern representative of the General Electric Company, declared the electrification of the Dallas-Greenville line of the Cotton Belt is entirely feasible. He is said to have indicated that his company would be willing to open negotiations with the Cotton Belt officials looking to the carrying out of a plan something like that entered into between the company and the Missouri, Kansas & Texas road for the electrification of the line of the Katy from Dallas to Denton.

Electrification of the Dallas-Greenville branch of the Missouri-Kansas-Texas Railway is being considered by Katy officials, according to W. M. Whitenton, Dallas, assistant chief operating officer of the Texas Katy lines.

Electrification of the Trinity & Brazos River Railway's line from Cleburne to Hillsboro, Tex., is being urged upon the company. The distance is about 30 miles. Cleburne now has an interurban to Fort Worth and Hillsboro is on a line out of Dallas. The connection between Cleburne and Hillsboro would prove a valuable line, it is declared.

Plans are said to be under way for the electrification of the Atoka-Oklahoma City Division of the Missouri-Kansas-Texas Railway's lines. Official confirmation of the report is lacking, but it is regarded as certain that the electrification program will be undertaken during the summer. The Atoka-Oklahoma City Division embraces the line between these two towns and is 100 miles in length. Construction of a line from Atoka to Denison, Tex., would also be included in the electrification program, thus affording a connection with the Texas lines of the Texas Electric Railway (the consolidated Strickland lines). This would afford an electric line from Waco, Tex., to Oklahoma City, a distance of considerably more than 300 miles.

No More Trolleys in Newburgh

The Newburgh (N. Y.) Public Service Corporation has absorbed the Hudson Transit Corporation. The former corporation is headed by Benjamin B. Odell, ex-Governor of New York State. The latter concern was controlled by Didsbury, Aber & Didsbury, Walden. With the Hudson Transit Corporation, the Newburgh Public Service Corporation acquired an additional eleven buses, giving it a total of twenty-five buses, all in operation. Fourteen are Fifth Avenue Coach Company buses; eight Mack buses and three Dodge Brothers buses. The two latter came in with the Hudson Transit Corporation purchase. Daniel G. Aber has been retained as manager of the Newburgh Public Service Corporation.

The Hudson Transit Corporation had been an inland passenger carrier in Orange County, and enjoyed numerous operating privileges, one giving the right to the company to run south from Newburgh to Nyack. The buying concern is keeping alive all of the franchises, and plans to develop them even further inland during the coming summer.

On March 31 the three remaining trolley cars were taken off the streets of Newburgh, making it exclusively a bus city. According to officials of the Newburgh Public Service Corporation, 33 per cent more persons have ridden in buses during the past winter when they were put on routes, than rode in trolley cars during the similar period in 1922. A bus terminal 200 ft. x 25 ft. is now in course of construction by the Newburgh bus concern. Five additional buses have been ordered from the Fifth Avenue Coach Company.

Service Greatly Improved in Des Moines

Another good illustration of the consistent efforts which the Des Moines (Ia.) City Railway is making to provide satisfactory service to its patrons is the announcement that the company will shortly start crosstown service. Two lines will be linked into the crosstown service within a very short time and it is planned to extend the system gradually over a majority of the lines in the city. For some time the congestion in the loop district has been a decided traffic problem and this has been particularly true during such emergencies as parades. At such a time it has been practically impossible to restore service to its normal state short of several hours. Des Moines tried crosstown service on one or two lines several years ago but it was abandoned.

Concrete evidence that the city is appreciating the efforts for good service which the company is making is contained in a highly complimentary editorial which appeared in the Des Moines *Daily Capital* recently. The editorial compared the experiences of Des Moines and Seattle in dealing with their railway problems, much to the disfavor of the Washington city which took over the car lines.

Another Ohio Railway Starts Interurban Bus Service

Bus operation by the Indiana, Columbus & Eastern Traction Company in Ohio, held in abeyance pending action by the State Legislature on the motorbus licensing and regulatory bill, was started between Columbus and Zanesville on April 8, following adoption of the bus measure a few days before. The Columbus-Zanesville bus service supplements the regular electric railway service. It is the forerunner of other bus lines in Ohio to follow the regular routes of the electric railway and to be operated between the periods at which cars on the traction line leave the terminal.

Copies of the new schedule have been filed with the Public Utilities Commission, together with tariff rates, as required by the new state law. The bus service is under the general management of R. L. Jacobs, Springfield, who has been relieved from duty as dispatcher in the Springfield offices of the traction company.

The bus company, known as the Zanesville & Dayton Motorbus Company, was organized several weeks ago, as outlined in a previous number of the ELECTRIC RAILWAY JOURNAL, for the expressed purpose of helping the traction company in its campaign against outside bus competition which had been making extensive inroads into its revenue. Terminals of the traction line are used as stations in the various cities by the buses.

Conductor Tenders Dinner to Co-employees of Carhouse

At Louisville, Ky., on March 22, an unusual event took place. One of the conductors at the Market Street carhouse, C. W. Wingate, gave a dinner to the seventy-odd employees of the carhouse and to all of the officials of the transportation department.

There are nine carhouses in Louisville and for the past few years President J. P. Barnes has been giving a dinner to men at the carhouse operating the greatest number of car-miles per accident during the preceding month. When a carhouse won the accident elimination contest two months in succession the ladies were invited to attend and a special dinner and special entertainment were provided.

The Market Street carhouse won the contest for the month of January. At the dinner which was given early in February Conductor Wingate announced that his pride in his carhouse and his interest in the welfare of the company were such that if his carhouse won the contest for the month of February, he would give a dinner to all the employees of his carhouse, at his own expense, in addition to the dinner President Barnes gave to the employees and their ladies.

Mr. Wingate's carhouse came in an easy winner for the month of February and President Barnes was host to the men and their ladies on March 19. On March 22, Conductor Wingate gave his dinner at the Market Street carhouse. He had as his guests seventy trainmen and carhouse employees and twenty-five or thirty officials and employees of the transportation department.

Director of Safety Neil W. Funk acted as toastmaster for the dinner and in addition to addresses by the various transportation department officials Conductor Wingate made a very able address on the necessity of furthering the efforts of the company in accident elimination.

Suburban Fare Increased at Dallas

The Dallas (Tex.) Railway has increased fares from the city of Dallas into Highland Park and from Highland Park into the city of Dallas. Highland Park is a suburb adjoining the city of Dallas on the North. It has a separate municipal government from that of Dallas.

The fare to and from Highland Park will be 8 cents, while the rate in the city of Dallas remains 6 cents. The increase in fares was approved by the City Council of Highland Park after an agreement with officials of the company that the company would bear its share of paving and make other specified improvements. The matter of paving had been in litigation between Highland Park and the company.

Passengers boarding cars in Dallas pay cash fare of 6 cents or present transfers. After crossing the Katy Railroad on Knox Street (Highland Park city limits) conductors announce that all passengers leaving cars after passing into Highland Park shall deposit 2 cents each in the fare box. Passengers boarding cars after crossing the Katy Railroad pay 6 cents. To these passengers transfers are issued which they surrender when leaving cars, as an indication that they are passengers who boarded cars of the company within the city limits of Highland Park.

Children under twelve years of age boarding cars in the city of Dallas pay 3 cents and deposit 1 cent on leaving cars in Highland Park.

Day students attending S. M. U. pay regular fare in the city of Dallas, and on leaving cars at S. M. U. (north of Mocking Bird Lane) show special students' cards. No additional fare is collected on presentation of this card.

Passengers boarding cars in Highland Park, coming to the city of Dallas, deposit 8 cents in the fare box. Passengers, however, who do not intend to come to the city of Dallas are permitted to ride for 6 cents.

Students boarding cars at S. M. U. (north of Mocking Bird Lane) are permitted to ride on 6-cent fare or students' tickets upon presentation of students' cards.

Children under twelve years of age boarding cars in Highland Park, coming to the city of Dallas, pay 4 cents. Children under twelve years of age who do not intend to come to the city of Dallas are permitted to ride for 3 cents.

Service and Number of Runs Increased

A new grouping of cars of the various divisions has been completed by the Los Angeles (Calif.) Railway, so that all cars of a line run out of the same division, and are under the direction of one division superintendent. Heretofore, most of the lines have been divided between two divisions with a resulting division of responsibility over the crews by division superintendents. New schedules on all lines were prepared and a general choice of runs according to seniority was conducted.

The rearrangement has increased service and has enabled the schedule department to build an increased number of runs. By placing all cars of a line at one division, it has been possible to join morning and evening trippers and increase the midday service, so as to make an additional number of desirable runs. Trainmen are given the option of working six or seven days a week.

The new plan of operation was put into effect by the company on April 1.

Will Start Bus Service.—Southern Indiana Gas & Electric Company, Evansville, Ind., will operate a bus service between Dixon, Ky., and Henderson.

Bus to Replace Railway.—The Richmond-Fairfield Railroad, operating from Richmond, Va., through Fair Oaks, Seven Pines and to the National Cemetery, has announced that on the completion of the Nine Mile Road concrete paving it will substitute buses.

"Technology Review" Reprints "Journal" Article.—The *Technology Review* reprinted in its April number the article and photograph of J. P. Barnes, recently published in the ELECTRIC RAILWAY JOURNAL. The story was published in the JOURNAL on the occasion of Mr. Barnes' election as head of the Central Electric Railway Association.

San Antonio Would Bar One-Man Cars.—The City Council of San Antonio, Tex., has adopted an ordinance barring the use of one-man cars in that city. Passage of the ordinance brought a protest from W. C. Tuttle, president of the San Antonio Public Service Company, who declared that enforcement of the ordinance would bring about a condition that would demand an increase in fares, as his company could not operate double crew cars and meet operating costs under the rate.

Accident Warnings in Davenport.—Coincident with the "safety week" to be undertaken in Davenport Ia., under the auspices of the good roads committee of the Chamber of Commerce, the Davenport police department and traffic squads, the Tri-City Railway is launching its own safety campaign. Large posters of warning to pedestrians and patrons of the lines are being installed in all the cars on the Davenport lines calling the attention of all who ride to the necessity of being continuously alert to guard against accidents. The warning signs will be changed weekly.

Personal Items

Mr. Wales at Winnipeg

Engineer of Wide Experience Appointed to Important Post with Winnipeg Electric Railway

M. W. Wales has been appointed engineer of maintenance of way and structures for the Winnipeg (Man.) Electric Railway in succession to S. Wilkins, who resigned last November and is now in Los Angeles, Calif.

Mr. Wales is a technical graduate in naval architecture, marine and civil engineering, with fifteen years of practical experience. From June, 1907, until September, 1909, he was employed by the Pennsylvania Tunnel & Terminal Railway, New York City, as instrument man on the construction of the East River tunnels and Sunny Side yard.

M. W. Wales

In this capacity he had charge of survey parties on tunnel excavation, concrete lining, track layout, etc.

After a year of private engineering practice in New York City, Mr. Wales, in 1910, was appointed engineer inspector of the Board of Water Supply, New York City, on the construction of Kensico dam and appurtenances. This work included the construction of 8 miles of relocated state highway, three reinforced concrete bridges, one of which was a five-span arch-design, 1,000 ft. between abutments. The dam proper was a cyclopean masonry structure with cut-stone and precast concrete block facings, with a three-span cut-stone arch bridge over spillway, and all roadways, walks, etc., paved with asphalt blocks.

From April, 1917, to August, 1918, he was engaged on naval architecture for the Continental Shipbuilding Corporation, New York City, and from August, 1918, until his connection with the Winnipeg Electric Railway he was employed by Fraser-Brace, Ltd., contractors, Montreal, first as engineer and assistant superintendent in charge of construction on a hydro-electric development for Price Brothers, Ltd., at Chicoutimi, Que., and later as construction engineer on the Great Falls development built for the Manitoba Power Company just outside Winnipeg. In connection with the Great Falls development, Mr. Wales had charge of the layout and construction of the transmission tie line and had charge of all the form and concrete work, reinforcing steel, etc., for the power house and dam.

J. H. Klinck to Supervise Westinghouse Production

J. H. Klinck has been appointed assistant supervisor of production of the Westinghouse Electric & Manufacturing Company. After completing a course in electrical engineering at Cornell, Mr. Klinck took up post-graduate work at the same institution, but before he had finished the course he received an appointment as instructor in electrical engineering at Lehigh University, where he continued his post-graduate studies. Some years later, as electrical engineer for the Lehigh Valley Railroad, he was closely associated with the installation of power, heating and lighting equipment in the various repair shops of that road.

In 1904 Mr. Klinck became connected with the Westinghouse Electric & Manufacturing Company in the industrial and power sales department as commercial engineer on railway shop equipment, with headquarters at East Pittsburgh. In 1910 he was transferred to the Atlanta sales district and was located first at Charlotte, N. C., and later at Birmingham, Ala. He was manager of the industrial and power division for the Atlanta territory for several years.

In 1918 he entered the army as a major in the construction division. He served as chief of the procurement section of the construction division, acting chairman of the board of claims of that division, and as one of the army representatives on the War Industries Board, being chairman of the army commodity committee on steam and electric equipment. Upon his discharge from the army in 1920, Mr. Klinck returned to the employ of the Westinghouse Electric & Manufacturing Company at East Pittsburgh.

S. M. Quinn has been appointed chief engineer of the Batavia power plant of the Chicago, Aurora & Elgin Railroad. Mr. Quinn, in this capacity, succeeded J. F. Martin, who has resigned to accept a position in the coal industry. The new engineer for the Chicago, Aurora & Elgin property goes from the Ford Motor Company at Detroit, Mich., where he performed the duties of engineer. This new appointment became effective on April 1, 1923.

Mr. Simonds in New York

Vice-President and General Manager at Dubuque Joins Electric Bond & Share Organization

O. H. Simonds has resigned as vice-president and general manager of the Dubuque (Iowa) Electric Company to accept an important position with the Electric Bond & Share Company, New York, one of the largest owners and operators of utility properties in the United States. The announcement was made at the local electric company's office on April 12.

Recently Mr. Simonds was elected vice-president and director of the Dubuque Electric Company. He has long been called the "Sphinx" by Dubuquers who know him. He does things for the interest of the company and the betterment of civic interests and says nothing. That's the reason for the sobriquet. When his activities are discovered he still maintains a discreet silence and lets actions and figures speak for themselves. His efforts to hide his light of genius under a bushel fail, however, to keep it concealed.

O. H. Simonds

Mr. Simonds, unlike many other public utility executives, takes an active part in civic affairs. He has been a member of the board of governors of the Chamber of Commerce for two years and has worked strenuously for the acquisition of new industries for the city.

Mr. Simonds was born in Duluth, Minn. He was graduated with the degree of mechanical engineer from Cornell University in 1908. For seven years thereafter he was employed in various capacities with the General Electric Company, spending the last four years of that period in the lighting and railway department of the General Electric Company's Chicago office. He then resigned to enter the engineering department of Elston, Clifford & Company, Chicago, and later became general manager of the Vicksburg Light & Traction Company, Vicksburg, Miss.

While he was in that state he served two years as president of the Mississippi Section of the National Electric Light Association.

Mr. Simonds was the first president

of the Mid-West division, N. E. L. A., comprising the states of Iowa, Missouri, Nebraska and Kansas. He served for two terms as president. He was also largely instrumental in the formation of the Iowa Committee on Public Utility Information.

He has served the Iowa Section, N. E. L. A., as president and is on the executive committee of the Iowa Electric Railway Association at the present time.

If Mr. Simonds has a hobby it is Union Park, a sylvan retreat in the hills of Dubuque County. In addition to his myriad duties he has had time to supervise the creation of this natural park, open to the autoist as well as electric railway patron, and has transformed a losing venture into a revenue producer.

Mr. Simonds will be located in New York in offices immediately adjacent to the building occupied by the Albert Emanuel Company, which recently took over control of the Dubuque Electric Company, and will thereby be able to assist materially by his advice and counsel in the completion of plans for the improvement of the local company which he had so much at heart.

His successor at Dubuque will be Thomas Parker, who comes from the Emporia, Kan., division of the Kansas Power Company, owned and controlled by the Albert Emanuel Company. Mr. Parker and Mr. Simonds are friends of long standing and associated in the activities of the Mid-West section of the National Electric Light Association. Mr. Parker is equipped technically and fitted temperamentally to continue in Dubuque the policies that have developed the Kansas properties.

New Officers Elected

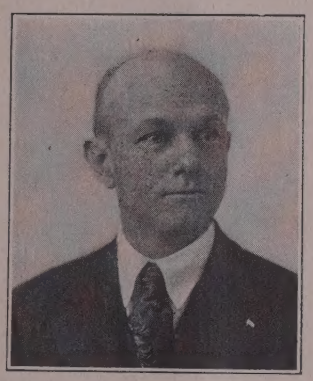
As a result of the purchase by the North American Company some time ago of the Milwaukee Northern Railway, new officers for the purchased property have been elected. They are as follows: President, John I. Beggs; first vice-president, S. B. Way; second vice-president and general manager, F. W. Walker; assistant general manager, John St. John; master mechanic, Frank T. Kittsley; purchasing agent, Fred V. Benz; claim agent, A. Kordich.

Edward M. Merrill in Cincinnati

Establishment of a department of schedules in charge of Edward M. Merrill, formerly of the Philadelphia (Pa.) Rapid Transit Company, has been announced by Walter Draper, vice-president of the Cincinnati (Ohio) Traction Company. Mr. Merrill until April 1 was assistant superintendent of transportation of the Philadelphia Rapid Transit Company. He was graduated from the Massachusetts Institute of Technology in 1909. For several years Mr. Merrill was engaged with the Union Pacific Railroad as a civil engineer and then entered the employ of the Puget Sound Traction, Light & Power Company, with which company he remained from 1914 to 1918. He next became connected with the Milwaukee Electric Railway & Light Company with the title of assistant superintendent of transportation. He resigned from the company at Milwaukee to go to Philadelphia. Mr. Draper said that the department of which Mr. Merrill will be in charge was organized for the purpose of working out a complete schedule of operations of the various routes.

W. R. Dunham Made Executive Engineer of Detroit Municipal Railway

W. R. Dunham, Jr., has been appointed executive engineer for the Department of Street Railways, Detroit, Mich., reporting to the Street Railway Commission and the general manager of the municipal railway. Mr. Dunham was connected with the Department of Street Railways at Detroit in connection with the building of the new lines in 1921. In April, 1922, he was engaged by the International Steel Tie Company to do special work as assigned. In November, 1922, he was called to Detroit by the Department of Street Railways in a consulting capacity in connection with arbitration proceedings between the city and the Detroit United Railway in the matter of the rate case to determine a base and rate for the use of the city's tracks by the D. U. R. interurban passenger and freight cars.



W. R. Dunham, Jr.

Mr. Dunham has been engaged in engineering work in the electric railway field for more than thirty years. His first connection with the industry was as a student in an engineering office in Providence, R. I., where work was done for the Union Railroad, a horse railway of that city. When the railway organized its own engineering department Mr. Dunham joined it, and as the system developed he was rapidly promoted. When, in 1893, the Union Railroad was merged in the United Traction & Electric Company he became principal assistant in track matters.

In 1902, when the United Gas Improvement Company took over the Providence property and formed the Rhode Island Company, Mr. Dunham's duties were radically changed for a time. Due to his familiarity with the layout of the property he was assigned to develop a system of transfers, for which purpose a new department was formed. However, two years later he went back with the engineering department in charge of all civil engineering matters.

In 1906 Mr. Dunham went to New Haven to become assistant engineer in the maintenance-of-way department of the Consolidated Railway (now the Connecticut Company), becoming engineer of maintenance-of-way in July, 1914. In this position he did most valuable construction, maintenance and valuation work.

V. W. Burley Becomes General Superintendent

Announcement has just been made of the promotion of V. W. Burley to the position of general superintendent of the Binghamton (N. Y.) Railway effective on April 1.

For the past thirteen years Mr. Burley has been connected with the Binghamton Railway, having first entered its employ as a conductor in 1910. Prior to that he had been with the Pennsylvania Railroad for ten years. At Binghamton Mr. Burley has been conductor, inspector, dispatcher and claim agent. In 1917 he became superintendent of transportation, and he has held that position until his present promotion.

Thomas Larimer has succeeded Otis McCormick as secretary and auditor of the Southern Cambria Railway, Johnstown, Pa.

Garfield Scott has succeeded C. R. Warden as general counsel of the United Gas Improvement Company, Philadelphia, Pa.

Amzi Smith has assumed the position of vice-president of the Johnston City (Tenn.) Traction Corporation, in addition to his duties as general manager.

Lewis A. Keen has been added as vice-president to the Ponce (Porto Rico) Electric Company. In this capacity he will work along with Marcey L. Sperry, who is also a vice-president of that property.

C. B. Brownell has succeeded Best Shaw as engineer of the power Station of the Burlington (Vt.) Traction Company. The new engineer of overhead construction is Frank Warner, who succeeds N. Young.

G. L. Enfors has succeeded M. T. Montgomery as superintendent of the Porto Rico Railway, Light & Power Company, San Juan, Porto Rico. C. B. Castro has succeeded A. Jimeney as purchasing agent of that company.

Sam Smith is now engineer of overhead construction of the Ephrata & Lebanon Street Railway and the Ephrata & Lebanon Traction Company, which operates the former railway property. Mr. Smith's office is located in Reistville, Pa. George E. Carson was

formerly manager of overhead construction of both properties.

J. L. Alexander, manager of the Keokuk (Iowa) Electric Company, will be transferred to the Haverhill (Mass.) Gas & Electric Company as manager. Mr. Alexander has been in Keokuk three years.

Miss Florence A. Snyder has been appointed auditor of the Marion & Bluffton Traction Company, Bluffton, Ind. The appointment became effective on April 1. Miss Snyder was formerly cashier and bookkeeper of the company.

Herbert B. Reynolds, mechanical-research engineer in the motive power department of the Interborough Rapid Transit Company, New York City, has been appointed secretary of the power division of the American Society of Mechanical Engineers for 1923.

William T. Crawford has succeeded George A. Peirce as secretary of the Rio Grande Valley Traction Company, the Northern Texas Traction Company, the Houston Electric Company and the Tarrant County Traction Company, all Stone & Webster properties. Mr. Crawford is located in Boston, at the main office.

Charles Fields has been appointed superintendent of the Morris County Traction Company, Morristown, N. J. Mr. Fields was with the New York & Queens County Railway, Long Island City, as chief inspector for seven years. In that same capacity he served with the Binghamton (N. Y.) Railway for five years. He was also associated with the J. G. White Management Corporation for eighteen months.

H. J. Sheeran some time ago was appointed assistant to the general manager for the receiver and secretary for the receiver of the New York Railways. In that position he succeeded F. T. Wood, who resigned to accept the position of president and general manager of the Fifth Avenue Coach Company. Mr. Sheeran has been connected with the New York Railways and its predecessors for more than twenty years. During that period he was associated with Mr. Wood in executive and operating capacities.

Frederick W. Gnichtel has been appointed by Governor Silzer as a member of the Board of Public Utility Commissioners of New Jersey. He will succeed Harry Bacharach, Republican, Atlantic City, whose term has expired. The appointment is for six years, at $12,000 annually. Judge Gnichtel was admitted to the New Jersey bar in 1893. Chancellor Walker appointed him an advisory master of the Court of Chancery a year ago. Mr. Gnichtel was formerly Mayor of Trenton. He is a Republican.

Clement Studebaker, Jr., has been elected a director of the Mississippi Valley Trust Company, St. Louis, Mo. Mr. Studebaker is the son of the late Clement Studebaker, Sr., financier and automobile manufacturer. He is identified with large public utility properties in Indiana, Illinois and Missouri, and is president of the Citizens' National Bank of South Bend, Ind. He is the chairman of the board of directors of the North American Light & Power Company, which it is proposed to consolidate with the Illinois Traction System into a new company to be known as the Illinois Power & Light Corporation, of which he will be president.

D. W. Snyder Heads Illinois Electric Association

D. W. Snyder, general manager of the Bloomington & Normal Railway & Light Company, Bloomington, Ill., since 1917, was recently elected president of the Illinois State Electric Association. After his graduation from Lafayette College in 1907 with an E.E. degree Mr. Snyder entered the East Pittsburgh works of the Westinghouse Electric & Manufacturing Company. The year 1909 was spent in construction work, and one year later he joined the Northampton Traction Company, Easton, Pa., as superintendent. From 1911 to 1914 he served as manager of the Clinton Gas & Electric Company, Clinton, Ill., and in 1915 he became connected as general superintendent with the Jefferson City Light & Power Company. Subsequently he was appointed to the position he now holds in Bloomington, Ill.

D. W. Snyder

Sir Henry Thornton has succeeded D. B. Hanna as president of the Niagara, St. Catherines & Toronto Railway, St. Catherines, Ont., and of the Toronto (Ont.) Suburban Railway. Major Graham Bell has succeeded A. J. Mitchell as vice-president of both properties mentioned. W. J. Oliver, who was formerly purchasing agent of the Niagara, St. Catherines & Toronto Railway, has been replaced by H. T. Brown, and Fred Jones has succeeded J. W. Walker as master mechanic of the Toronto Suburban Railway.

M. T. Montgomery, formerly general storekeeper and later "Suggestion Man" of the Pittsburgh (Pa.) Railways, has succeeded R. A. Cale as superintendent, claim and purchasing agent of the Atlantic & Suburban Railway, Pleasantville, N. J. Mr. Montgomery's railway experience began in 1898 with the Union Traction Company, which is now a part of the Pittsburgh Railways. In July, 1919, after having been manager of railways of the Monterey Railway, Light & Power Company, Monterey, Mexico, for six years, Mr. Montgomery became special assistant to the general manager of the Pittsburgh Railways.

C. D. Emmons, president of the American Electric Railway Association, is announced as one of the speakers at the session on motor buses to be held at the automotive transportation meeting of the Society of Automotive Engineers at Cleveland, Ohio, on April 26 and 27. Mr. Emmons is down on the program to speak at the session on the morning of April 27.

W. S. Wells, freight claim agent of the South Brooklyn Railway, New York, N. Y., has been appointed general freight agent. Besides his new duties Mr. Wells will continue in the capacity of freight claim agent. He started with the company in 1905 as a clerk in the freight office at Twenty-third Street. Since then he has served as agent at the Bush Docks, clerk in the main office of the freight department and as chief clerk in the office at Twenty-third Street. In 1906 he was made freight agent at Twenty-third Street and on March 1, 1920, was appointed freight claim agent. Prior to connection with the South Brooklyn property he was identified with the Philadelphia & Reading Railway.

David Elwell has been appointed manager of the New York office of Lockwood, Greene & Company, succeeding W. H. Rose. Mr. Elwell was graduated from the Massachusetts Institute of Technology in 1904. During his college years he did work for the Massachusetts Harbor and Land Commission and, after graduation, was with the Edison Electric Illuminating Company of Boston, the Westinghouse Electric & Manufacturing Company at East Pittsburgh and was superintendent on electrifications of the New York division of the New York, New Haven & Hartford Railroad, representing the electrical construction department of the Westinghouse company. The four following years he was in the sales department of the Westinghouse company in New York City and for five years was electrical engineer in the Boston office of Lockwood, Greene & Company. He was transferred to the New York office in 1920 and has been with the company in that city ever since.

Obituary

Roderick John Mackenzie, Canadian railroad man, died in Los Angeles on March 1. He was for a number of years a director of the Winnipeg (Man.) Electric Railway, from which position he resigned in 1918. Mr. Mackenzie's activities in western Canada were confined largely to steam railroad interests. His father, Sir William Mackenzie, until 1918 was the president of the Winnipeg Electric Railway and also president of the Canadian Northern Railway System.

Manufactures and the Markets

News of and for Manufacturers—Market and Trade Conditions
A Department Open to Railways and Manufacturers
for Discussion of Manufacturing and Sales Matters

New Car Building Plant

Missouri Car Company, with Works in East St. Louis, Ready to Engage in Construction

The Missouri Car Company, designer and builder of steel cars and auto bus bodies, plans to open its plant at Twenty-fourth Street and McCasland Avenue, East St. Louis, Ill., on April 15.

This company maintains general offices in the Chemical Building, St. Louis, Mo. It was organized about a year ago by Theodore A. Brewster, Edward S. Stebbins and others. The company is capitalized for $500,000 and has more than $300,000 invested in its large plant and the ten-acre tract on which it stands.

The building, although not constructed for the company, required few alterations to comply with the firm's plant requirements. It is situated on the Terminal Railroad Association's belt and through it has physical connections with twenty-six trunk line railroads that enter the East St. Louis gateway. On the other side of the plant is the Southern Railroad. The facilities for securing raw material are almost ideal, with the plant in the center of the East St. Louis industrial district. Electric power is obtainable from the East St. Louis Light & Power Company.

The company is equipped to manufacture electric cars of all patterns and automobile chassis. The plant has an estimated capacity of 600 to 800 street cars annually. It is expected that it will be capable of attaining quantity production within three months after starting operations. Among the other products of the plant will be a non-rollicking truck for which Mr. Brewster holds the patent. It is also planned to make a stock motor bus body, but the facilities of the company will permit the manufacture of a bus body according to any desired pattern.

Because of the uncertainty as to the date on which the plant would be in operation the company prior to April 5 had not contracted for any orders, but it has received inquiries from four large transportations systems. One Eastern company indicated its desire to order 250 cars, deliveries to be made within three months. The other inquiries were for smaller amounts.

The plant building is of semi-fireproof construction, one story high and 105 ft. by 567 ft. It has been equipped with a modern sprinkler system at a cost of $55,000. The walls and partition walls are of brick laid in cement and provided with a saw-tooth roof. The shop is divided into three principal sections, the steel shop, the wood mill and the fabricating department.

Mr. Stebbins, the president of the company, has had considerable experience in the selling and financial fields. He will direct the sales organization and handle the financial details for the company. He was formerly Western district manager for a large Cleveland industrial plant.

Mr. Brewster, the vice-president and chief engineer, was for fourteen years with the J. G. Brill Company of Philadelphia, seven years with the St. Louis Car Company and four years with the Kuhlman Car Company of Cleveland and other concerns. He has acted as plant manager, production director and chief engineer, and will be in charge of production for the Missouri Car Company. He has designed the plant so as to take full advantage of his past experience, a feature of his planning being an arrangement whereby physical handling of materials is practically eliminated, conveyors carrying wood, steel, etc., from one department to another as required.

The other officers are:

Alfred H. Palmer, second vice-president, with the George L. Dyer Insurance Agency Company; Wilbur L. McKim, treasurer, also vice-president of the Koken Companies, St. Louis, the Chisholm-Koken Barber Supply Company, New York, and Illmo Supply Company, St. Louis; Lawrence J. McKim, secretary, a graduate of Missouri University and the Washington University Law School. These officers and Dr. W. P. Henrich and A. G. Muesenfechter constitute the board of directors.

3,000-Volt D. C. Locomotives Shipped to Spain

Three of the six 100-ton, 3,000-volt electric locomotives comprising part of the $1,500,000 contract for the electrification of 40 miles of the Spanish Northern Railway were shipped by the International General Electric Company on the *S.S. Florinda* on April 9 from South Brooklyn in the presence of a party of engineers and officials, including the Spanish Consul General and his staff.

These locomotives are of particular interest since they are a somewhat novel design using three-axle instead of the usual two-axle trucks. Each locomotive is equipped with two trucks and six 400-hp. motors, giving a capacity sufficient to handle a full tonnage train up the 2 per cent grades at 22 m.p.h. On the return trip the trains will be held by regenerative electric brakes, thus saving wear on brakeshoes and wheels.

In addition to the locomotives, the contracts placed by the Spanish Company include equipment of two 300-kw. substations and material for overhead distribution for the entire electric zone. Shipment of this latter equipment has already been made and is being installed by the Spanish Company. It is understood that six additional locomotives are also on order, which will be for the most part built by Spanish manufacturers.

The photograph shows the cab of one locomotive in position on deck and the Spanish Consul and his staff standing in front of the machine.

Spanish Consul and Staff See Shipment of Locomotives Put on Shipboard

Price of Steel Is Not Expected to Advance at Once—Production Greatest in History

A significant development of the week in trade was the announcement of an advance of 11 per cent in steel plant wages effective April 16. According to *Iron Age*, on the basis of 40 cents an hour for common labor instead of 36 cents, steel making costs are increased to the producer about $1.75 a ton. Prices to the consumer have advanced much more than this since Sept. 1 when steel works wages went up, but the great bulk of mills shipments, especially in the case of the Steel Corporation. are still at the lower prices of last fall. At 146,500 tons a day as the estimated March output for the country, steel production was at a yearly rate of 45,500,000 tons whereas the greatest year's record was 43,619,200 in 1917. Important buyers are said to be covered well ahead now. The opinion is that the 11 per cent increase in wages will not result in further advances in prices to the consumer at this time. It is said that the advance in wages had long been expected and had virtually been written into present-day prices. This is the feeling both in Pittsburgh and in Chicago.

Chilean Locomotive Order Being Filled Rapidly

The Westinghouse Electric & Manufacturing Company has recently delivered six express passenger locomotives for the electrification of the Chilean State Railways. To date, twenty of the thirty-nine locomotives included in the contract for locomotives of several types have been shipped. The substation and line material went forward during the latter part of 1922.

The State Railways officials hope to have in operation at the time of the Pan-American Exposition one section of the railway system which is now being electrified.

Metal, Coal and Material Prices

Metals—New York	April 10, 1923
Copper, electrolytic, cents per lb	17.625
Copper wire base, cents per lb	19.625
Lead, cents per lb	8.25
Zinc, cents per lb	7.75
Tin, Straits, cents per lb	46.625
Bituminous Coal, f.o.b. Mines	
Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons	6.25
Somerset mine run, Boston, net tons	3.375
Pittsburgh mine run, Pittsburgh, net tons	2.00
Franklin, Ill., screenings, Chicago, net tons	2.075
Central, Ill., screenings, Chicago, net tons	1.625
Kansas screenings, Kansas City, net tons	2.625
Materials	
Rubber-covered wire, N. Y., No. 14, per 1,000 ft	7.50
Weatherproof wire base, N. Y., cents per lb.	19.50
Cement, Chicago net prices, without bags	$2.20
Linseed oil (5-bbl. lots), N. Y., per gal	$1.17
White lead, (100-lb. keg), N.Y., cents per lb	13.375
Turpentine, (bbl. lots), N.Y., per gal	$1.61

Rolling Stock

Detroit (Mich.) Municipal Railway is building twenty-five cars in its own shops largely from material taken over from the Detroit United Railway. The cars will be ready for service about June 1. If traffic continues to grow, more cars will be needed but no immediate purchase is contemplated.

Hydro-Electric Power Commission, Toronto, Ont., will shortly place an order for twelve cars. It is expected that this number will be made up of eight one-man two-men cars, two large interurban cars and two express cars. This number is in addition to the order placed recently for four cars of the one-man two-man type.

Schenectady (N. Y.) Railway will buy new equipment to carry out a recent order of the commission. The ruling includes the purchase of six new interurban cars for use on the Albany-Schenectady line, and the Troy-Schenectady line, and the purchase of an additional twelve cars for use in the city of Schenectady. The company is also instructed to secure one new double-truck snow plow before Nov. 1.

Danville Traction & Power Company, Danville, Va., has placed an order for five cars with the Perley A. Thomas Car Works. They are described as follows:

Date order was placed	Jan. 17, 1923
Date of delivery	June 15, 1923
Type of car	Double-truck, semi-convertible motor
Seating capacity	Forty
Total weight	32,600 lb.
Bolster centers, length	15 ft. 10¼ in.
Length over all	39 ft. 8 in.
Truck wheelbase	5 ft. 4 in.
Width overall	8 ft. 4⅝ in.
Height, rail to trolley base	10 ft. 11⅛ in.
Body	Steel
Interior trim	Cherry
Headlining	Agasote
Roof	Arch
Air brakes	Westinghouse Traction Brake Company
Car signal system	Consolidated Car Heating Company
Car trimmings	Bronze
Control	General Electric Company
Couplers	Pocket type
Curtain fixtures	Curtain Supply Company
Curtain material	Pantasote Company
Designation signs	Keystone Electric Service Supplies Company
Door operating mechanism	Manual
Fare boxes	Johnson Fare Box Company
Fenders or wheelguards	Consolidated Car Fender Company
Gears and Pinions	General Electric Company
Hand brakes	National Brake Company
Heater equipment	Consolidated Car Heating Company
Headlights	Golden Glow
Lightning arresters	General Electric Company
Motors, type and number	Four GE No. 265
Motors	Inside hung
Registers	International
Sanders	Air
Sash fixtures	O. M. Edmonds
Seats	Heywood Brothers & Wakefield
Seating material	Wood slat
Slack adjuster	American
Step treads	Mason Safety
Trolley catchers or retrievers	Earll
Trolley base	U. S. No. 13-E
Trucks	Taylor reduced height, 26-in. wheels
Wheels	Cast iron, 26 in.

Track and Roadway

Wisconsin Rapids (Wis.) Street Railroad will spend $8,000 during the year for additional equipment, improvements and new construction work to its system.

Market Street Railway, San Francisco, Calif., is reconstructing all four tracks on Market Street from Sansome to the Embarcadero.

Twin City Rapid Transit Company, St. Paul, Minn., will begin work at once on the laying of tracks to the site of the Ford Motor Company at High Dam. At this point a new Ford plant is soon to be started.

Lake Shore Electric Railway, Cleveland, Ohio, through general manager Coen, has signed an agreement with Fremont city officials whereby the company agrees to pay its share of East State Street improvement.

Portland (Ore.) Railway, Light & Power Company plans repairs to street car tracks in various parts of the city at a cost of $500,000 during 1923, according to F. I. Fuller, vice-president of the company.

Trade Notes

Bridgeport (Conn.) Brass Company has moved its Chicago district sales office from the State Lake Building to the Wrigley Building.

Samuel P. McGough has been appointed Western sales agent of the Lorain Steel Company with headquarters at 1320 Monadnock Building, Chicago. In this capacity he succeeds Andrew Sylvester Littlefield, whose death was referred to in the ELECTRIC RAILWAY JOURNAL, issue of March 24.

The Pennsylvania Crusher Company announces the opening of a Chicago office under the management of Clinton S. Darling. Until May 1 the office will be in the Monadnock Building, after which it will be permanently in the Illinois Merchants' Bank Building, 230 South Clark Street.

Ralph W. Read, formerly with the McGraw-Hill Company as copy writer on various papers at Chicago, and later as advertising manager of *Electrical Merchandising* at Cleveland, has joined the J. A. Snyder Company, advertising agency, with offices in Chicago. More recently he was advertising manager of the F. H. Roberts Company, Boston. Mr. Read will be in charge of the technical department created and equipped to render the special service required by advertisers in the equipment field.

New Advertising Literature

Irving Iron Works Company, Long Island City, N. Y., in its Catalogue 3A describes with illustrations the complete story of the fireproof ventilating flooring and Irving safstep. The pamphlet contains some seventy-two pages.

Uehling Instrument Company, Paterson, N. J., is mailing to its friends copies of a folder describing several Uehling products which have for their purpose the increase in boiler-room and turbine-room efficiency. The folder contains useful technical data in this field.

Pennsylvania Crusher Company, Philadelphia, Pa., has issued a new bulletin, No. 1005, describing the company's coal-preparation machinery, such as is used in power plants and elsewhere. The bulletin also covers primary and secondary crushers for cement, rock and limestone.